

THE IRON AGE

A Review of the Hardware, Iron and Steel Trades.

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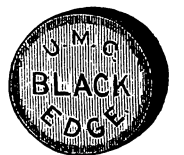
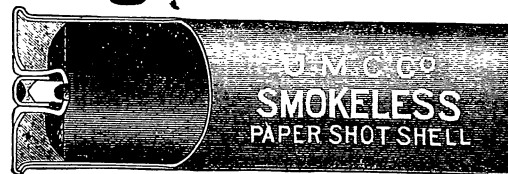
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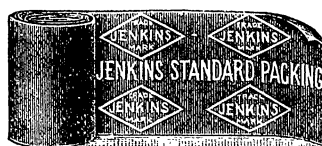
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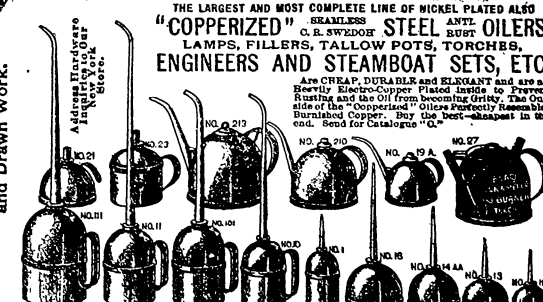


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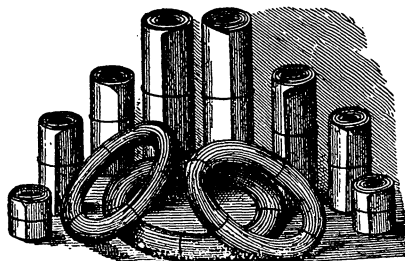
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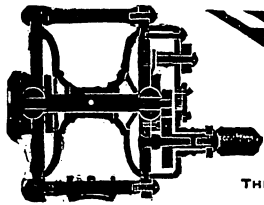
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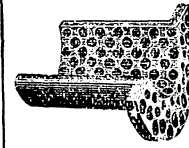
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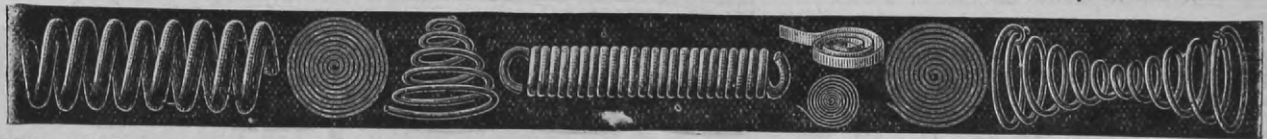
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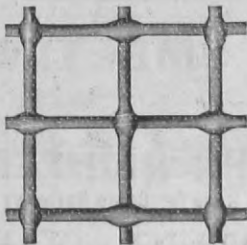
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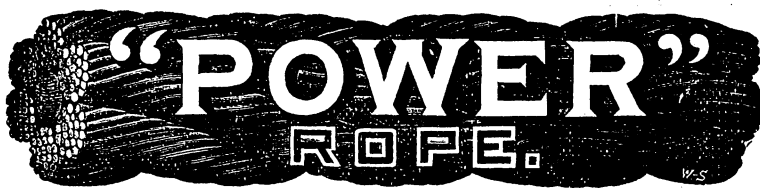
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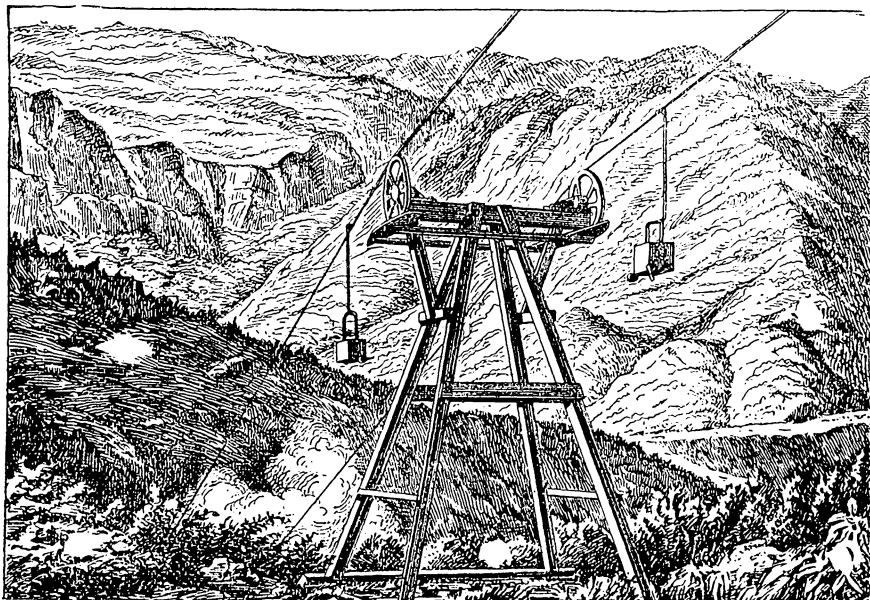
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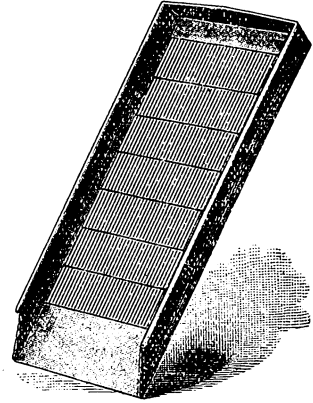
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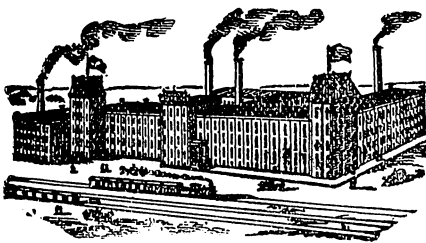
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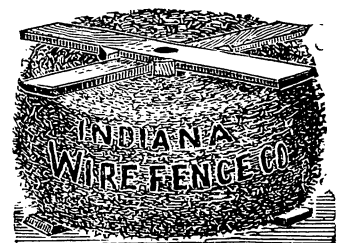
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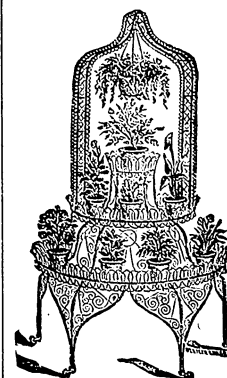
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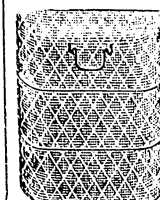
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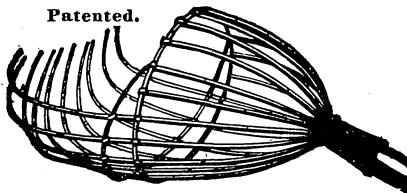
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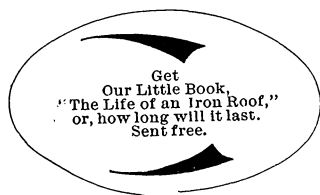
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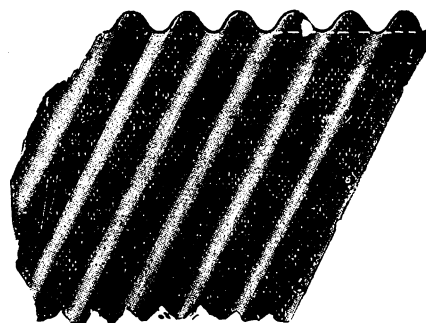
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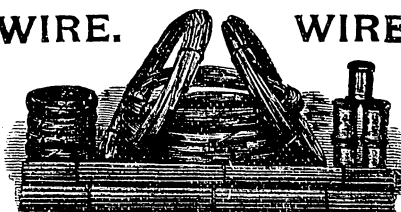
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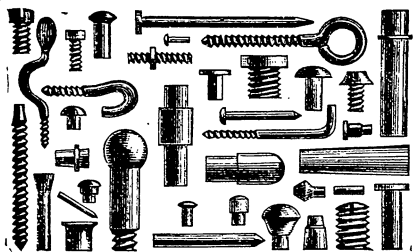
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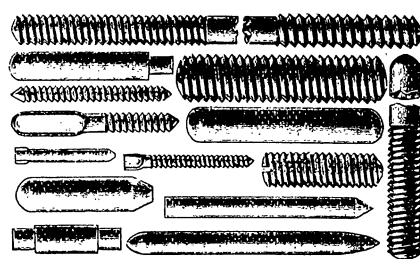
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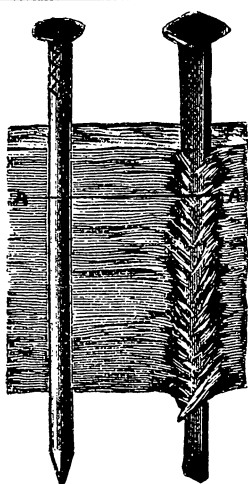
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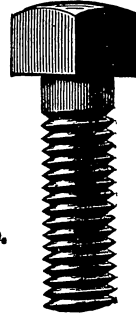
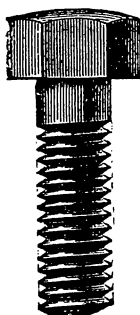
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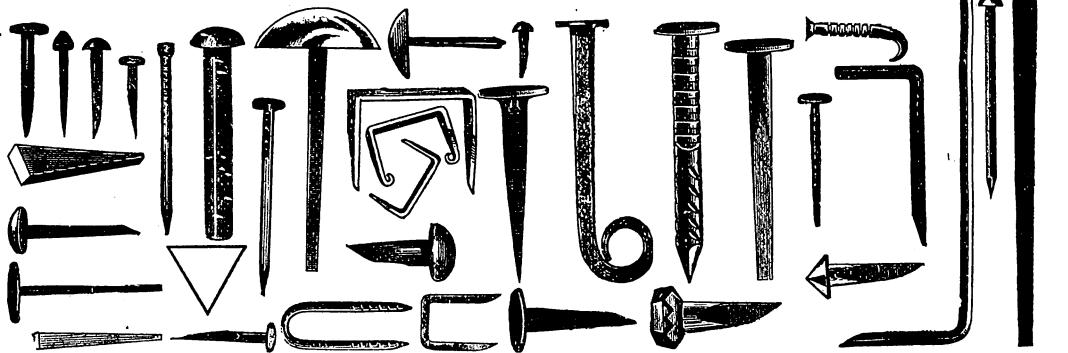
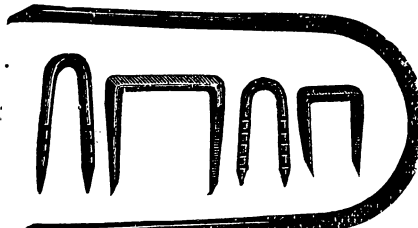
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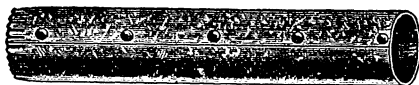
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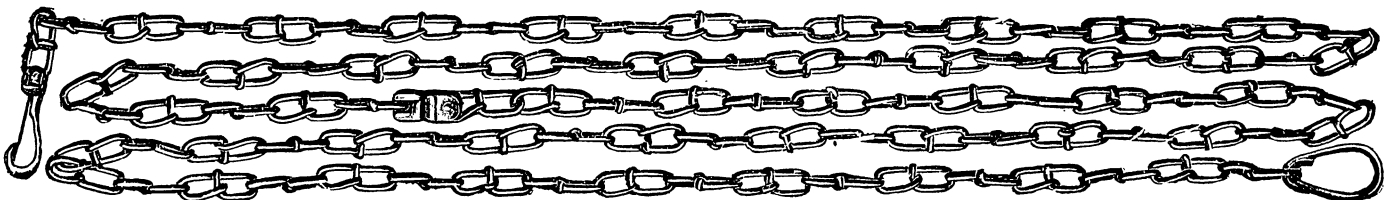
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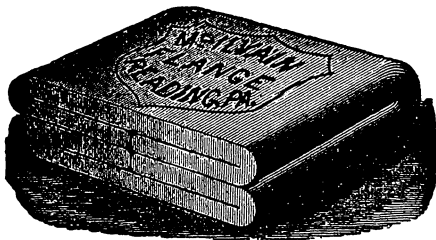
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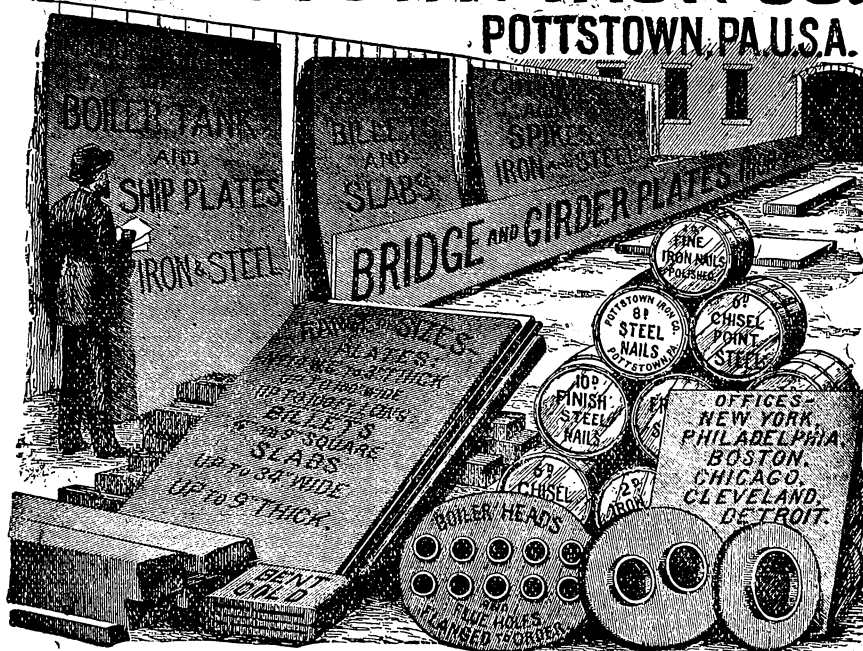
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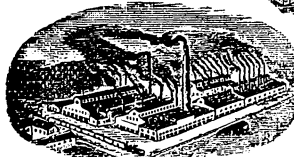
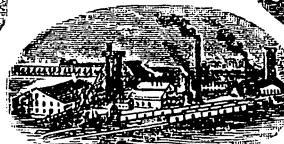
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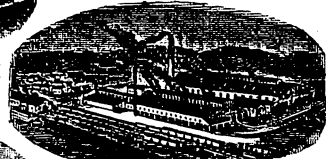
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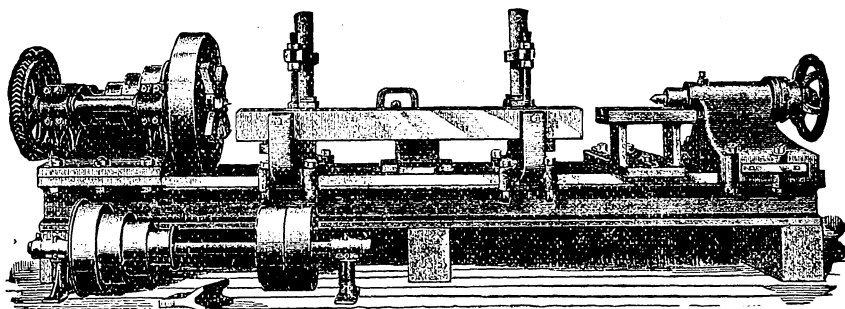
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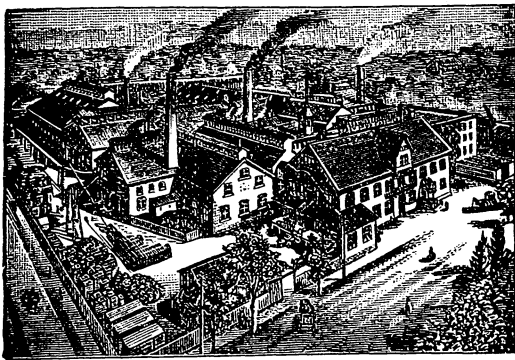
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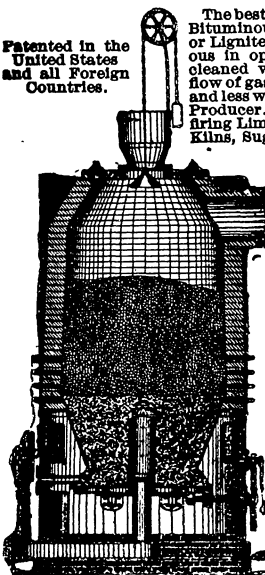
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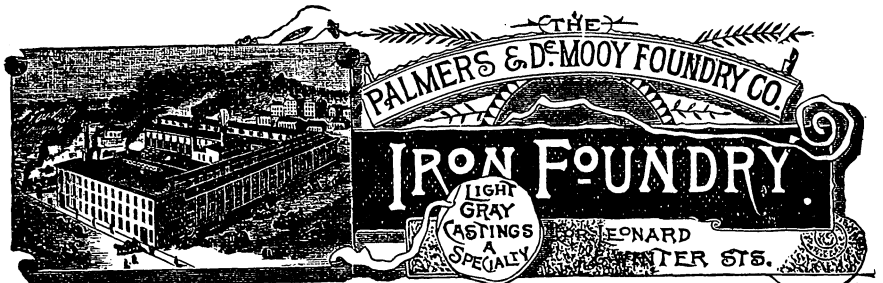
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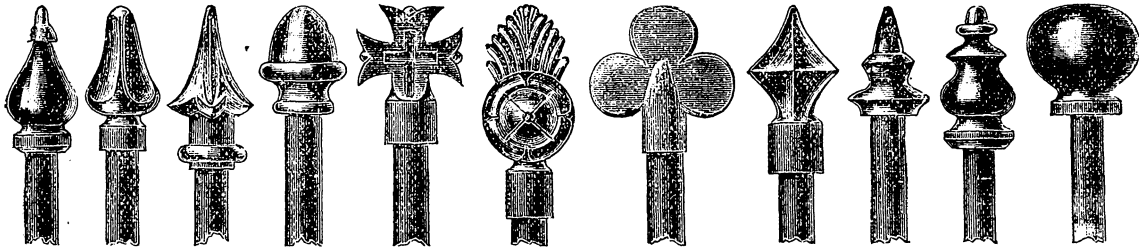
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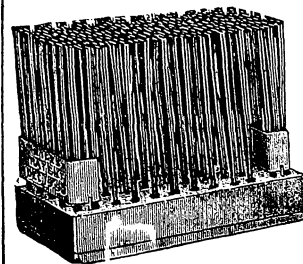
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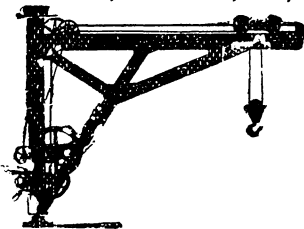
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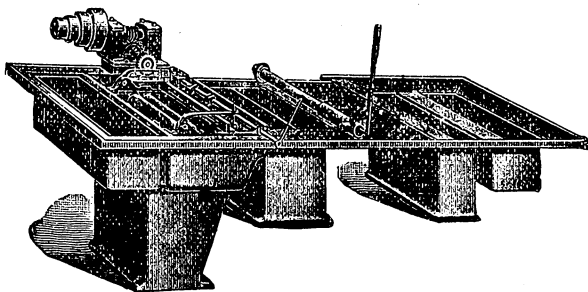
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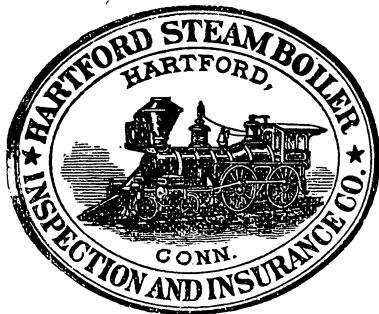
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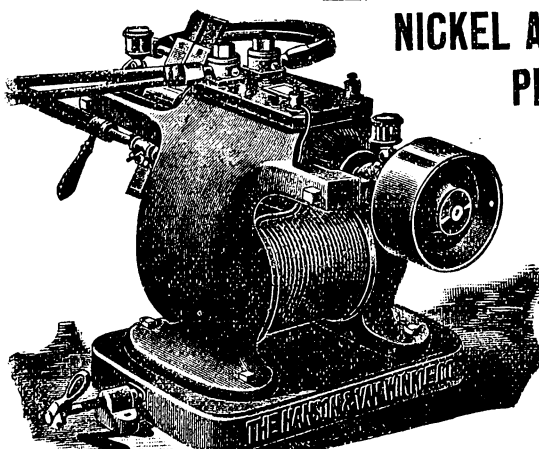
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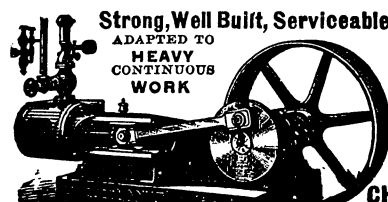
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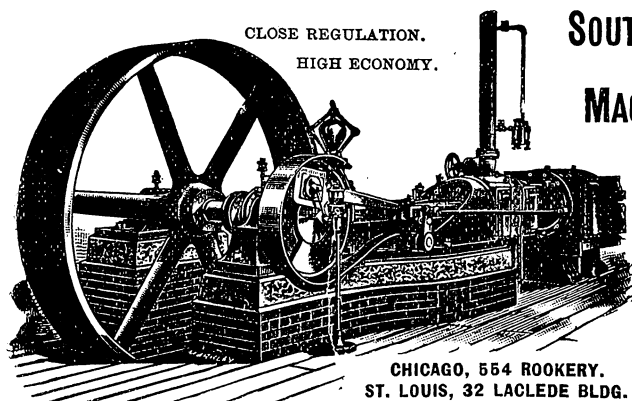


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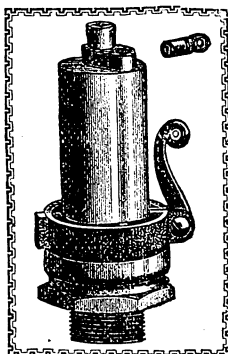
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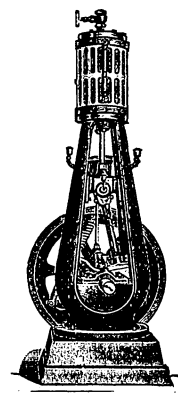
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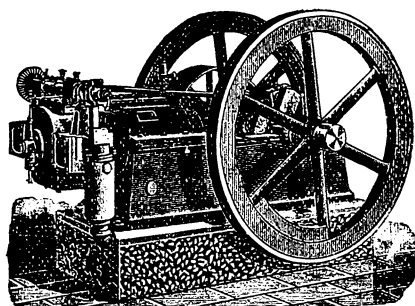
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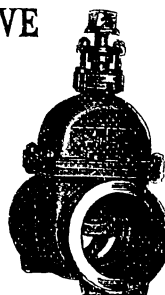
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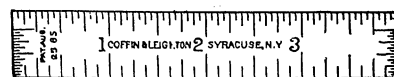
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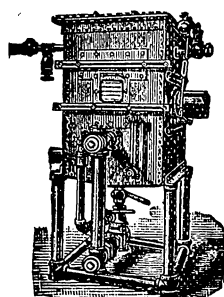
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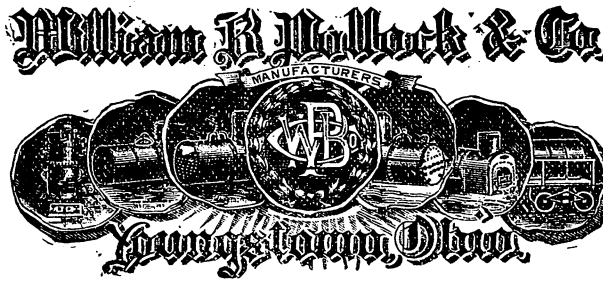
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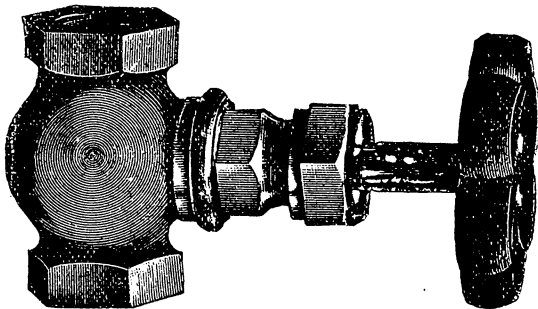
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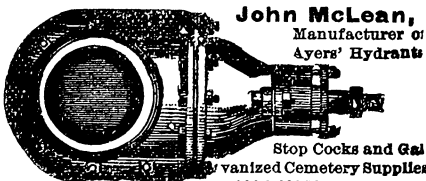
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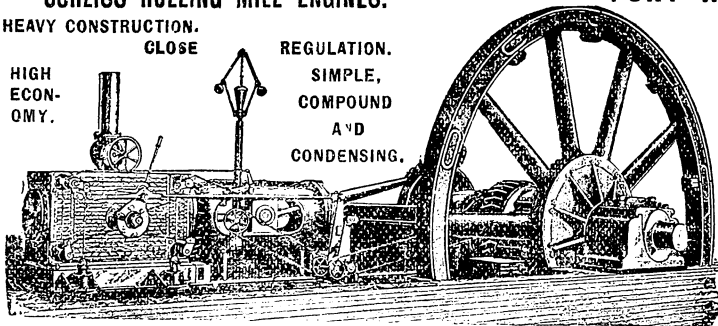
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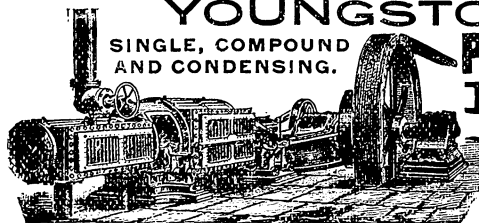
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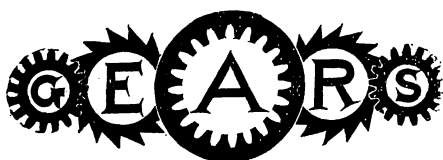
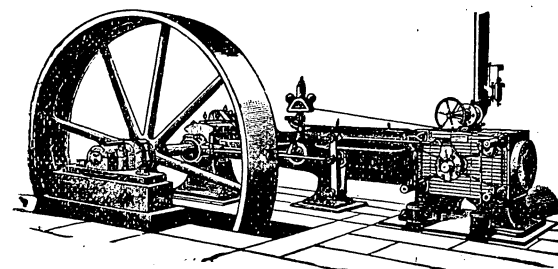
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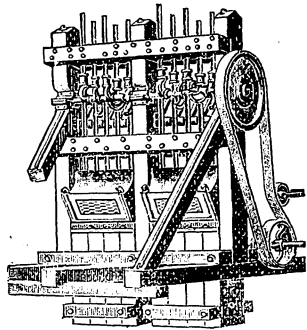


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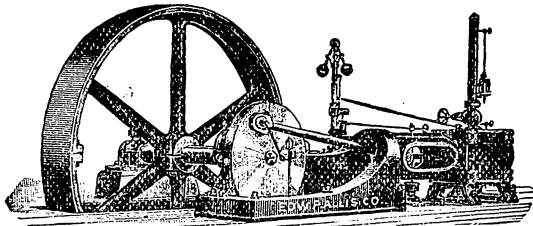
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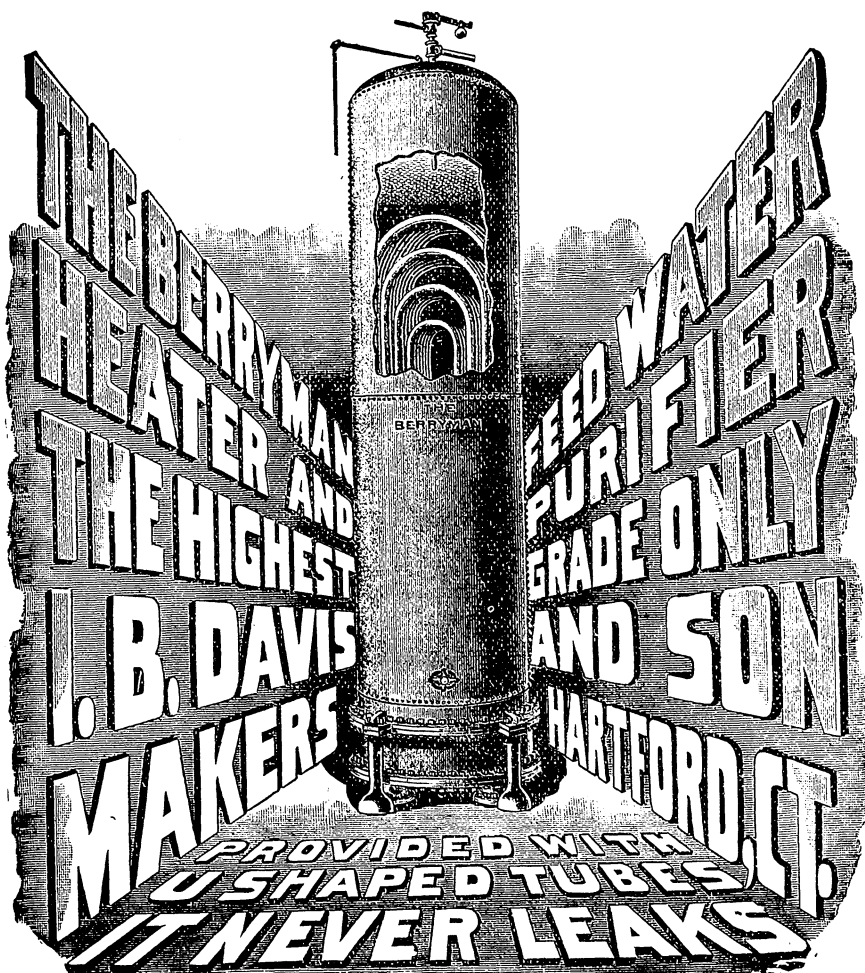
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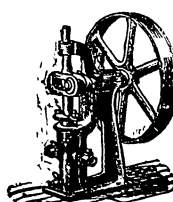


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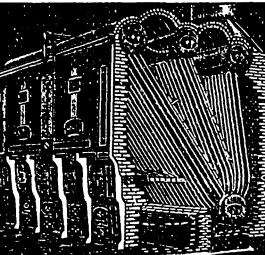
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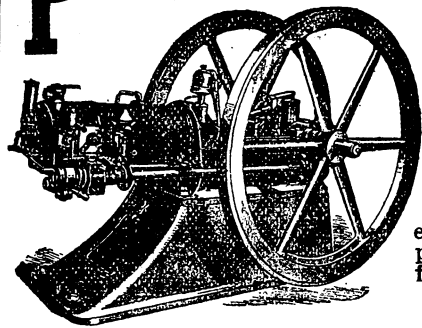
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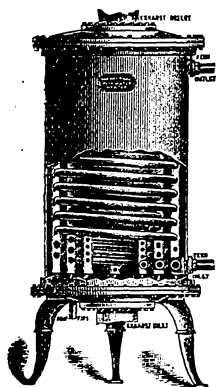
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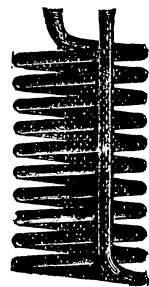


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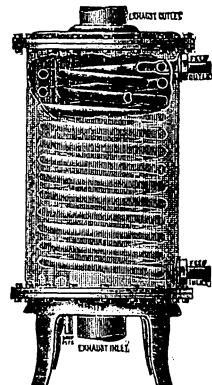
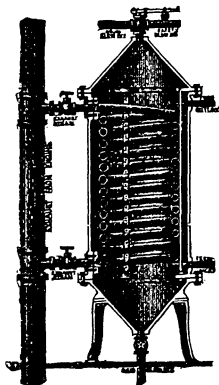
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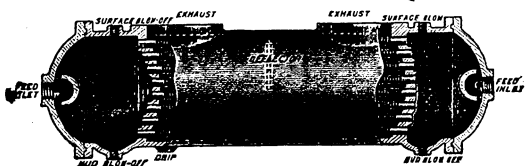
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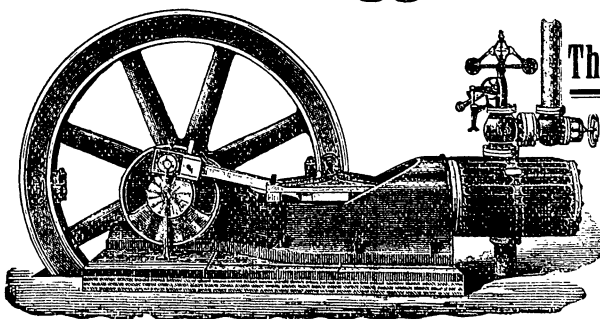
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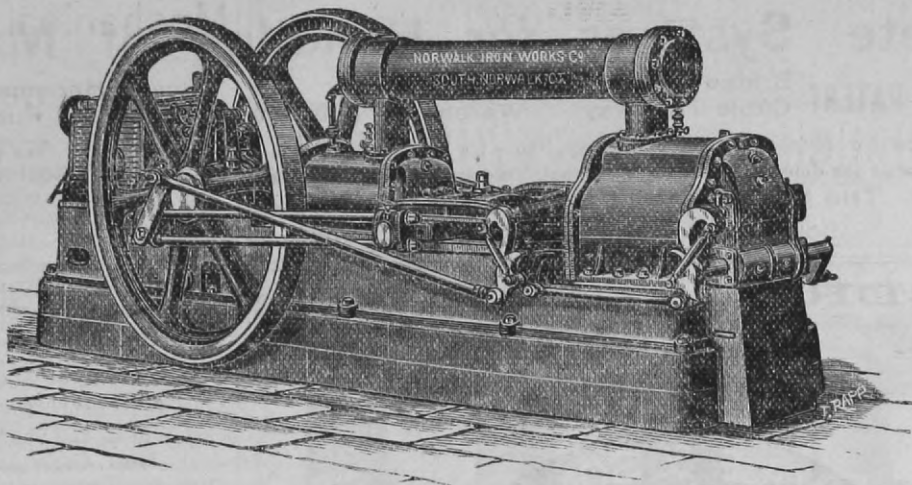
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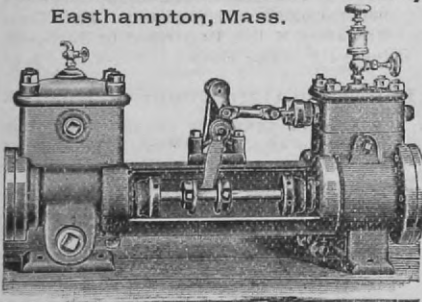


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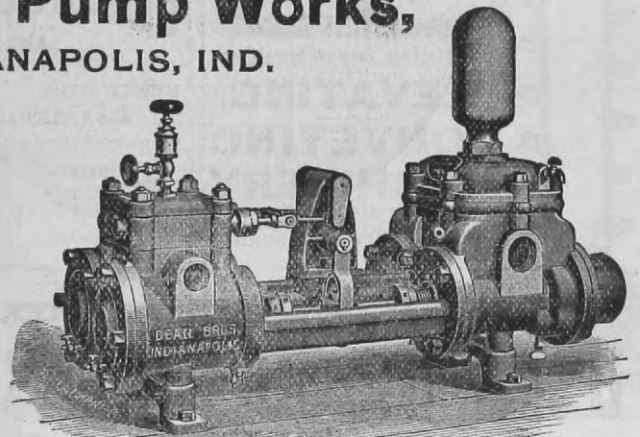
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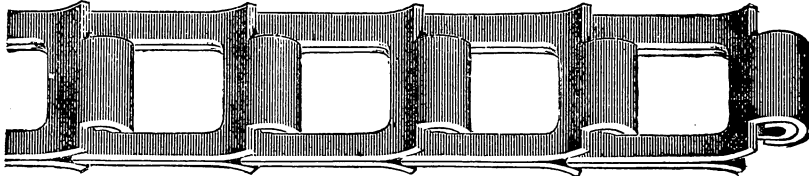
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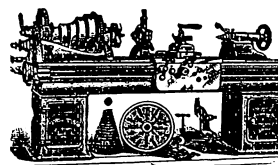
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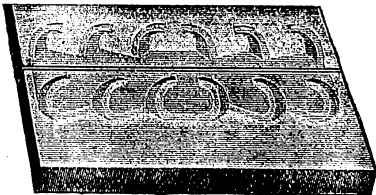
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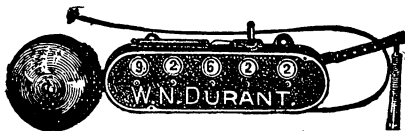


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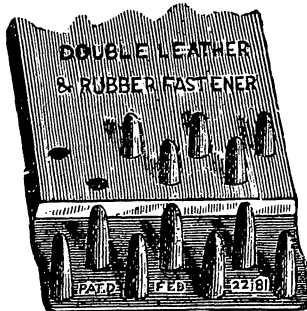
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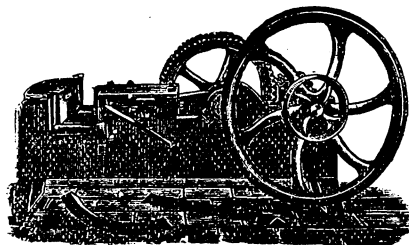
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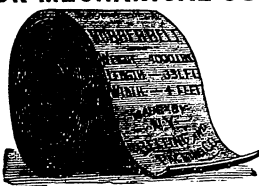
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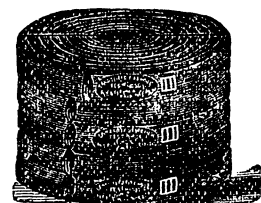


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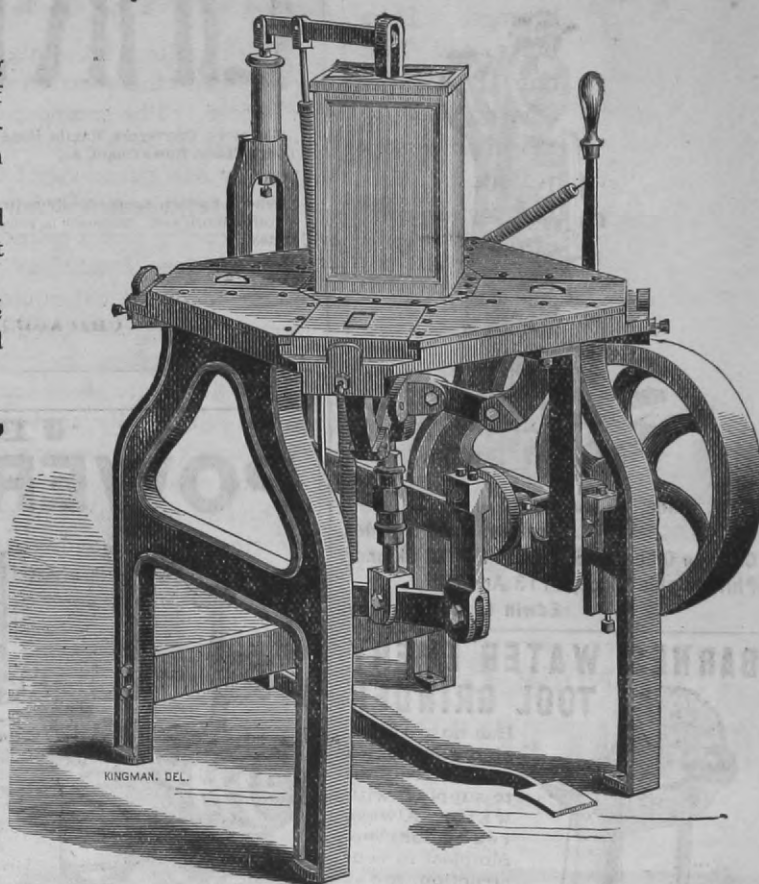
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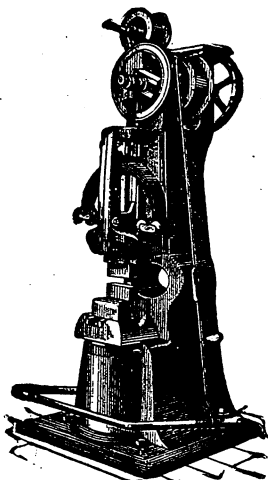
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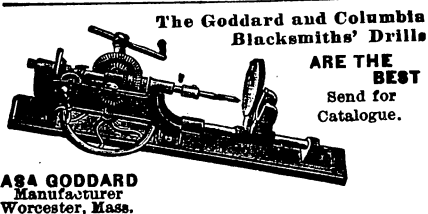
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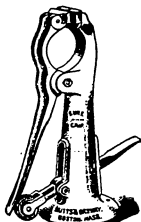
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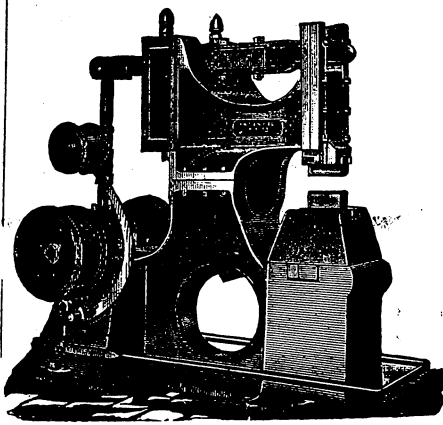
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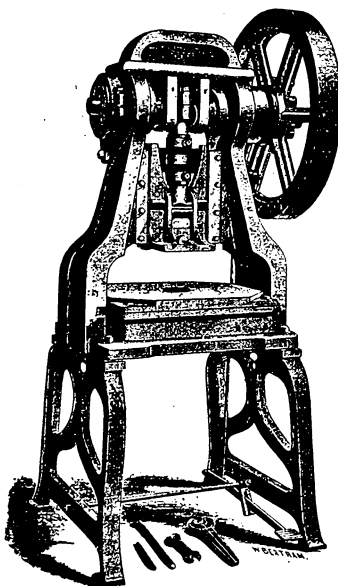
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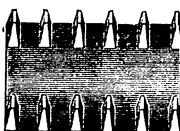
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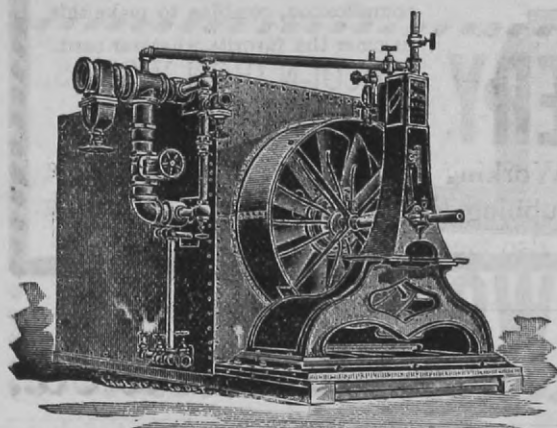
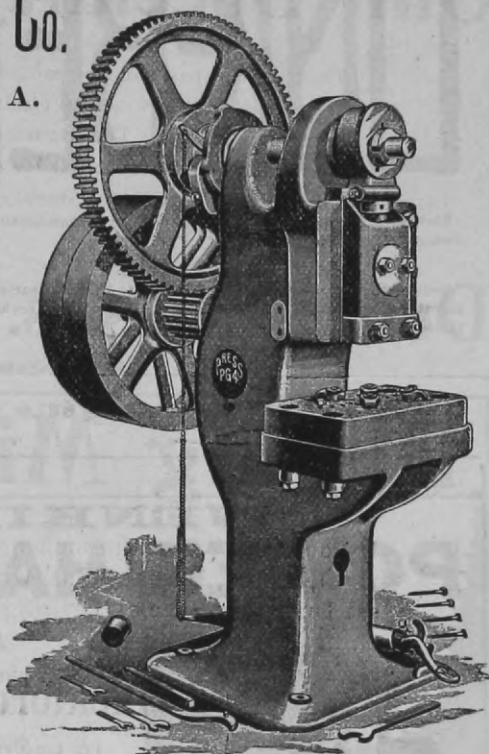
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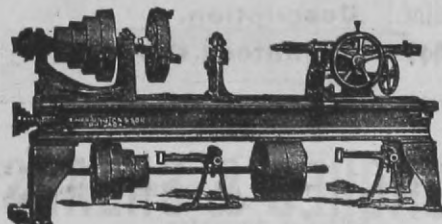
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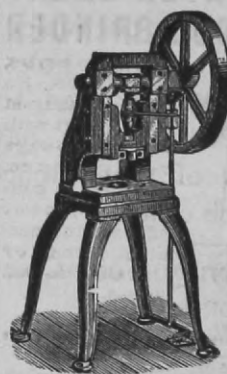
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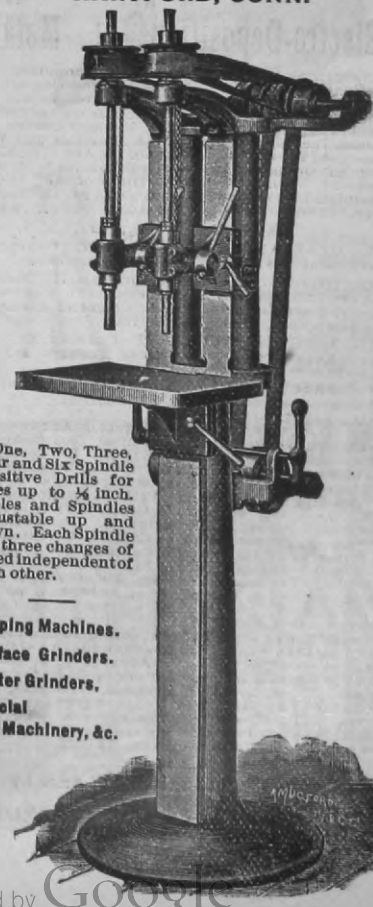


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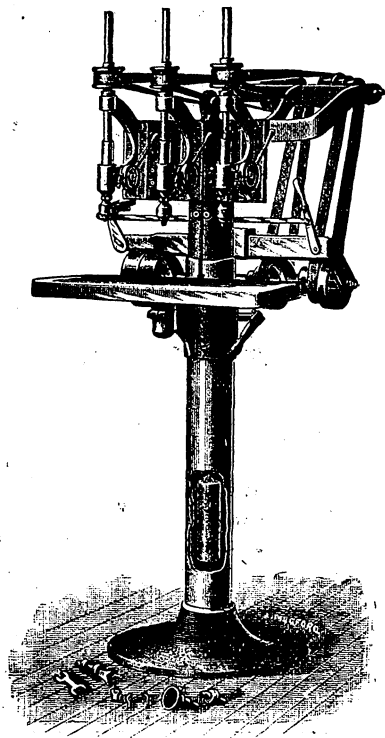
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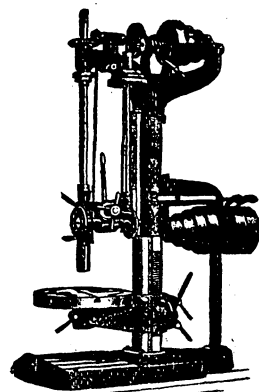
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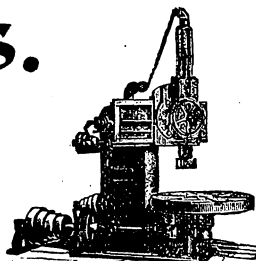
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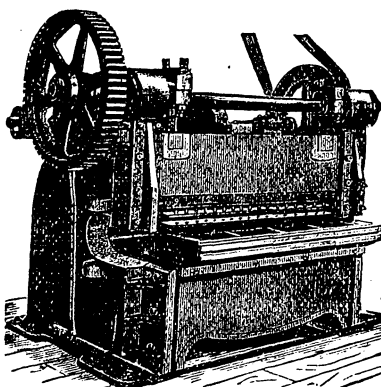
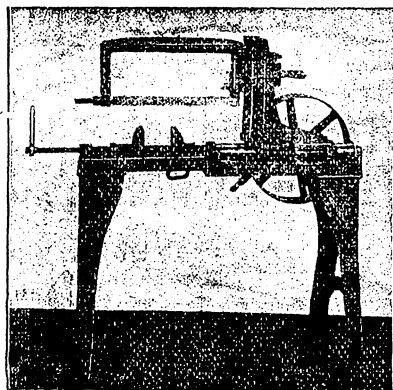
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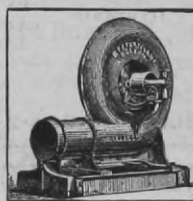
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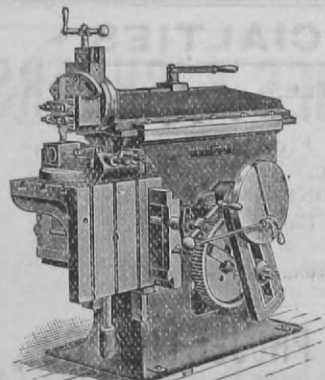
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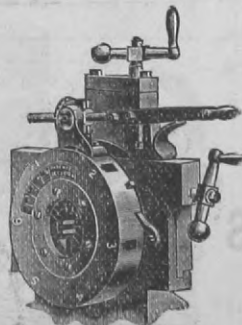
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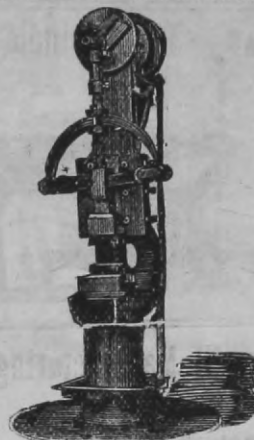
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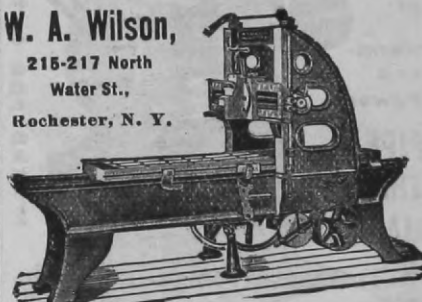
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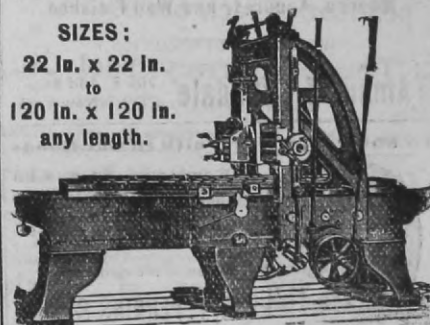
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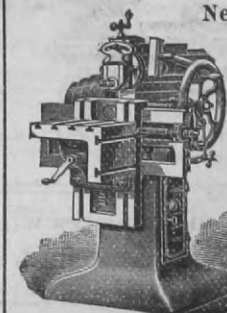
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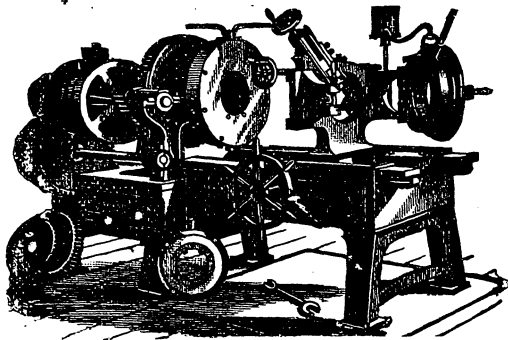
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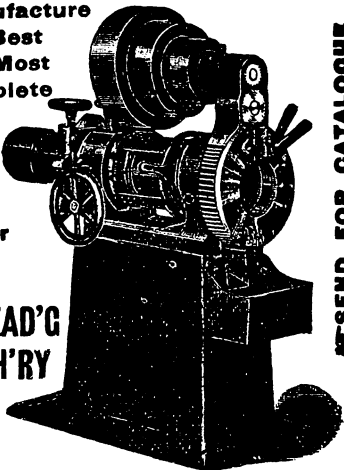
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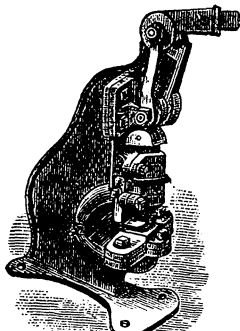
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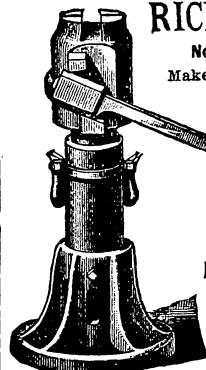
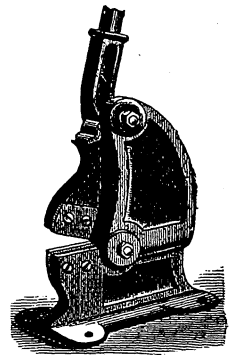
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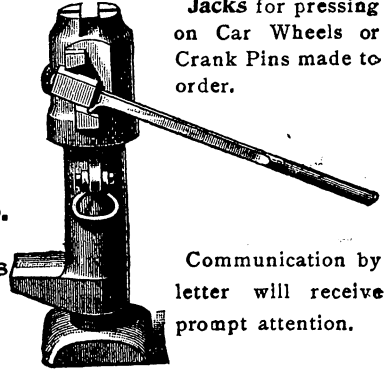
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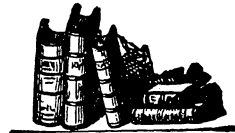
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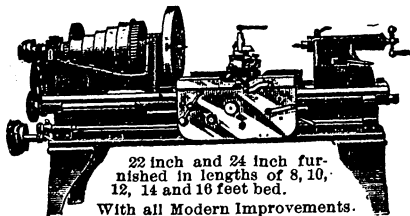
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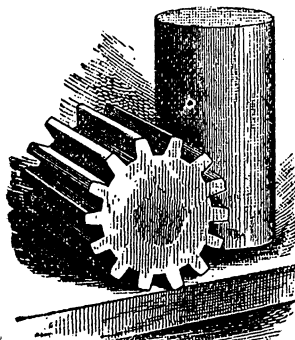
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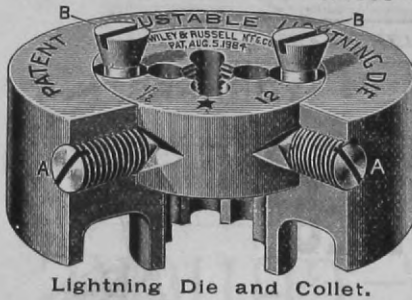
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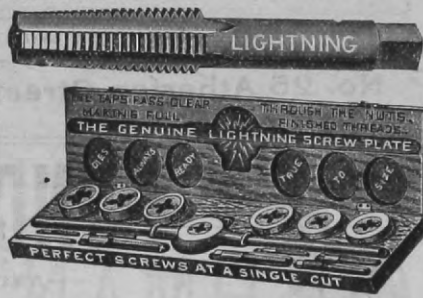
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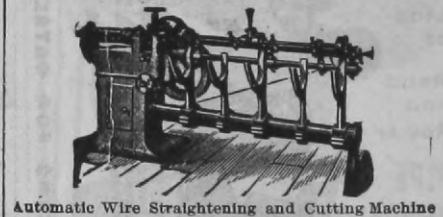
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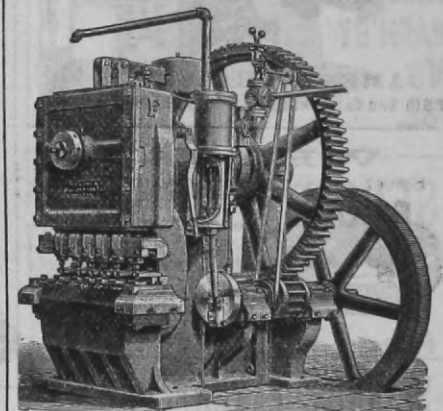
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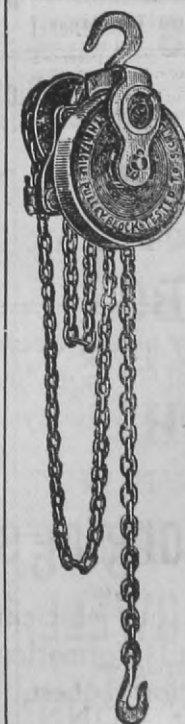


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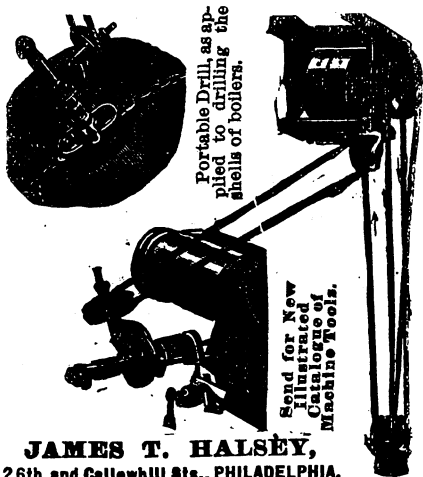
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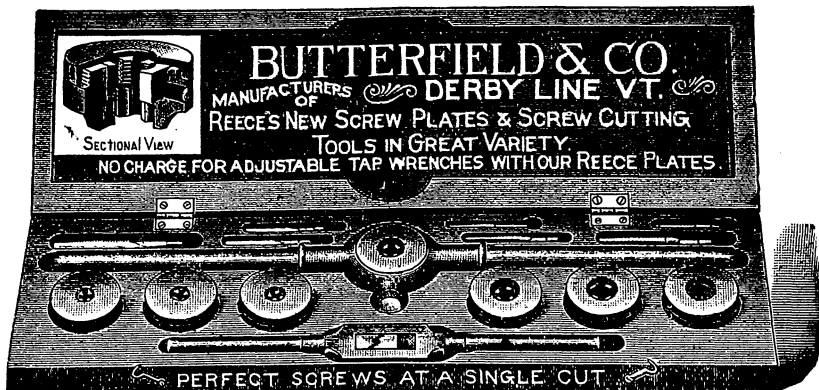
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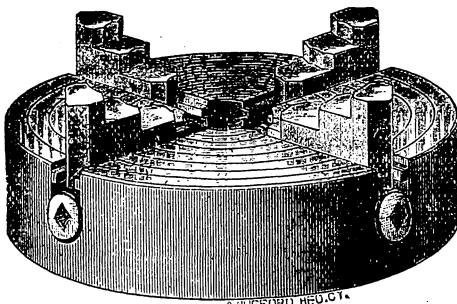
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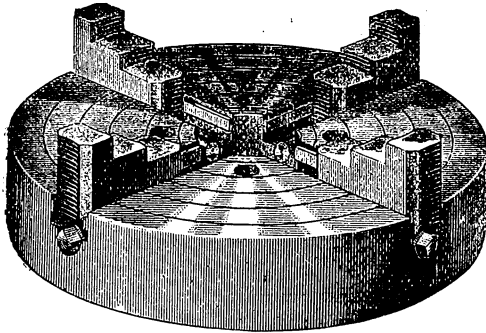
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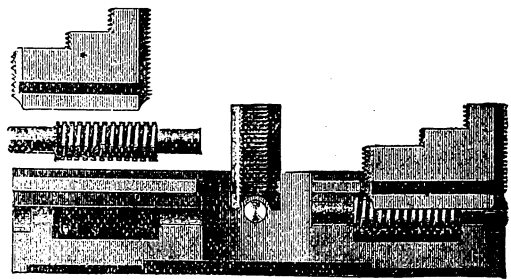
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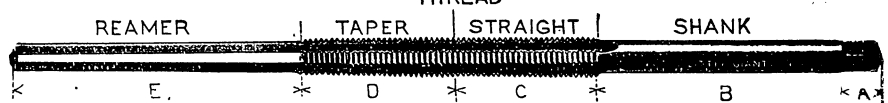
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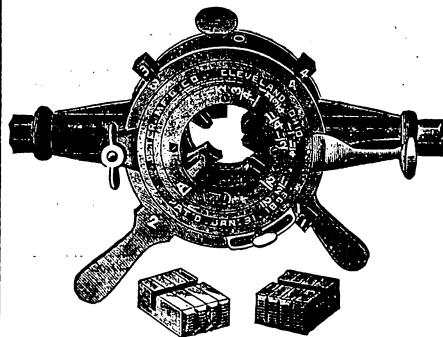
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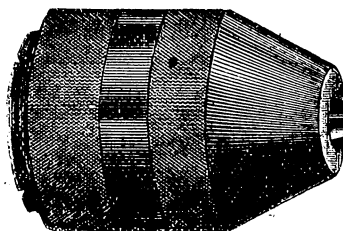


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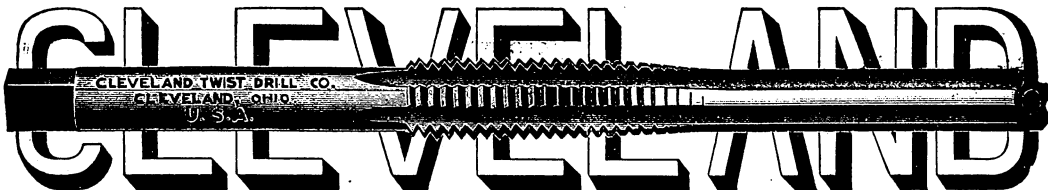
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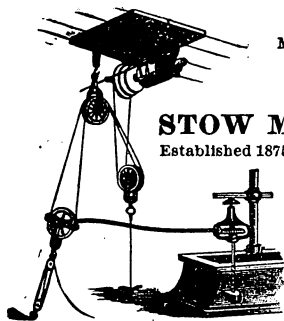
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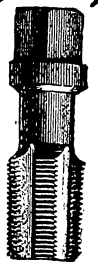
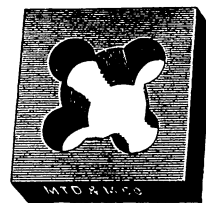
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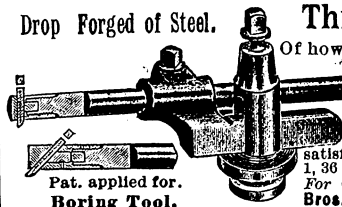
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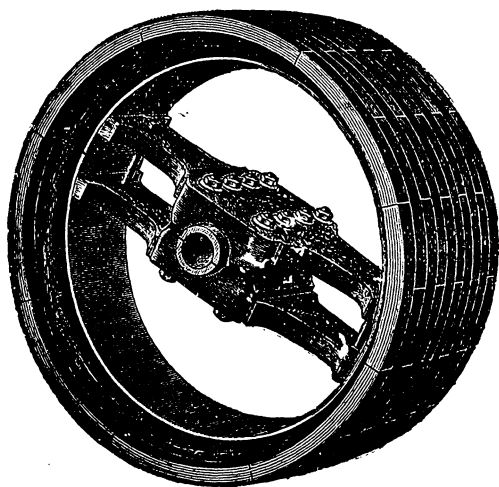
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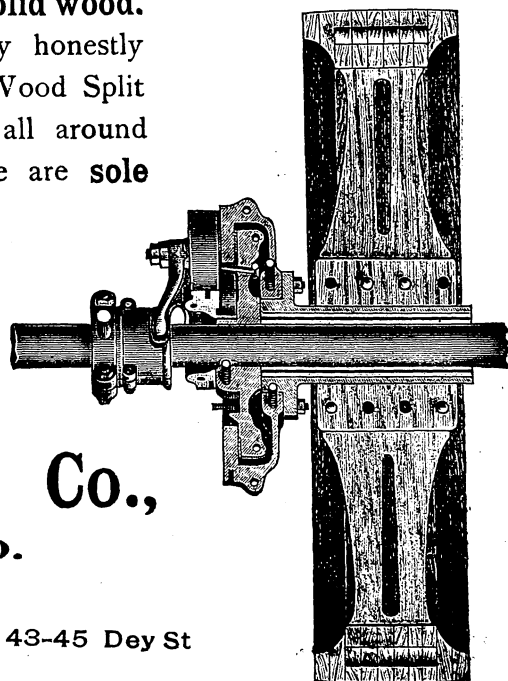
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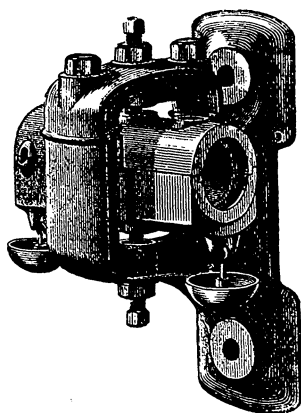
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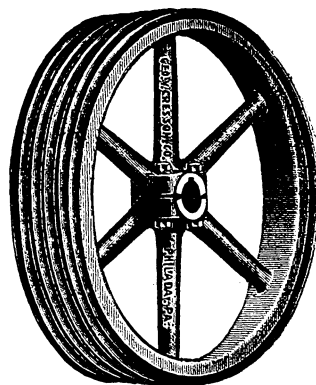
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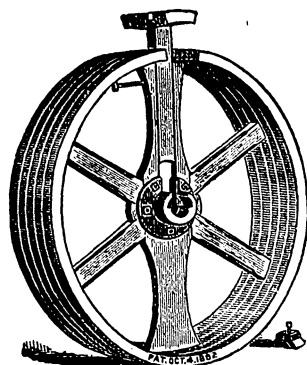
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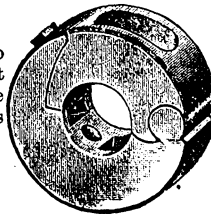
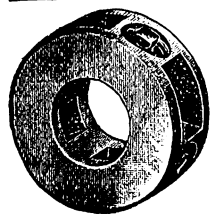
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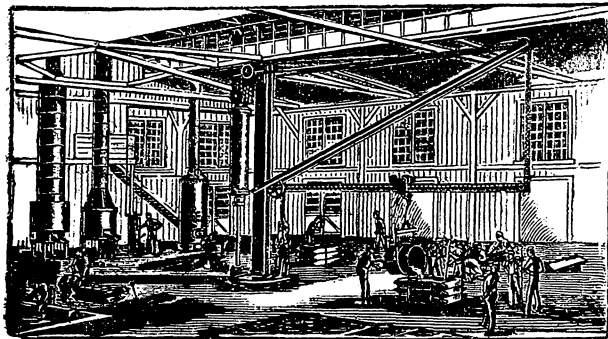
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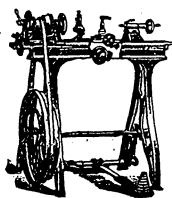
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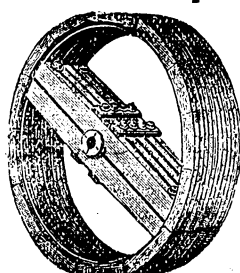
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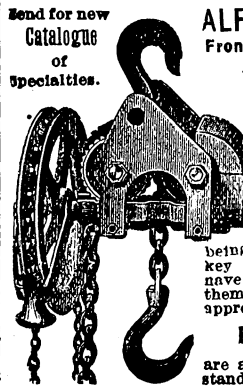


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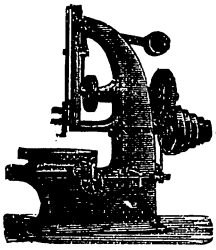
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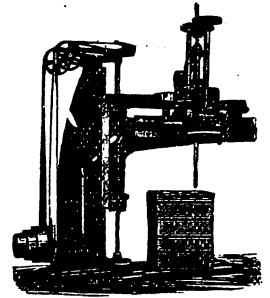
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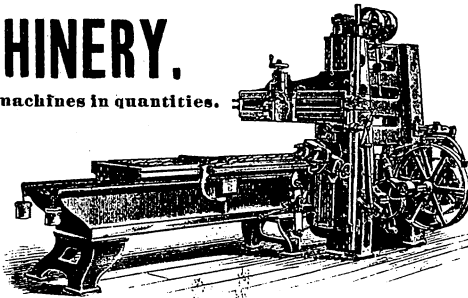
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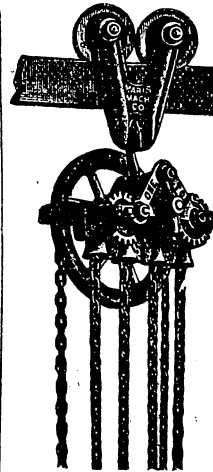
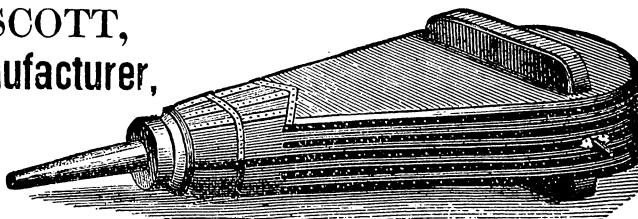
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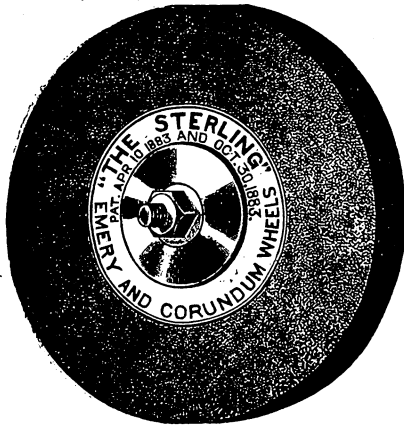
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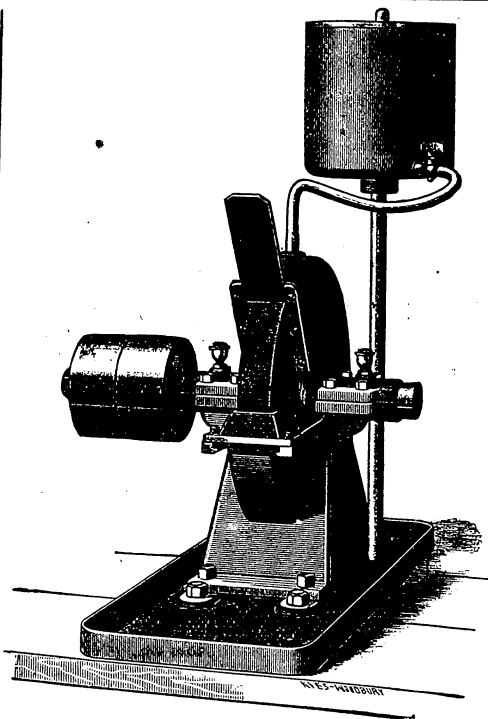
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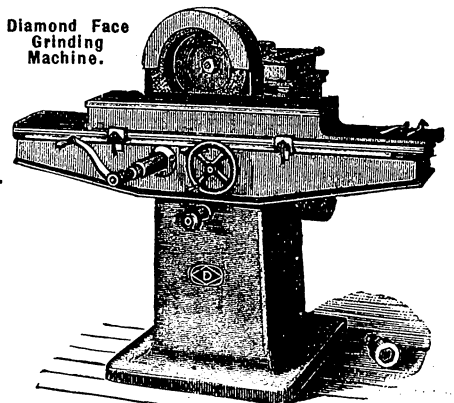
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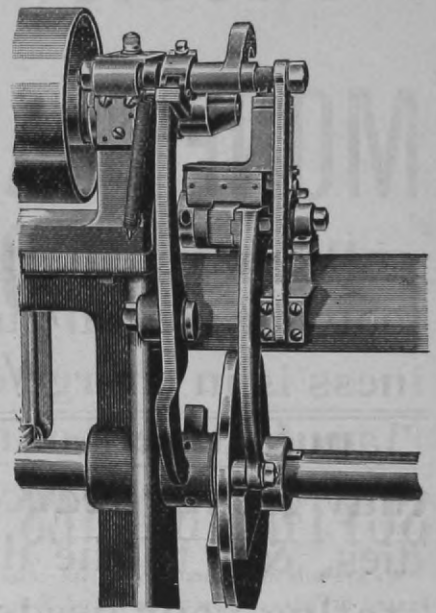
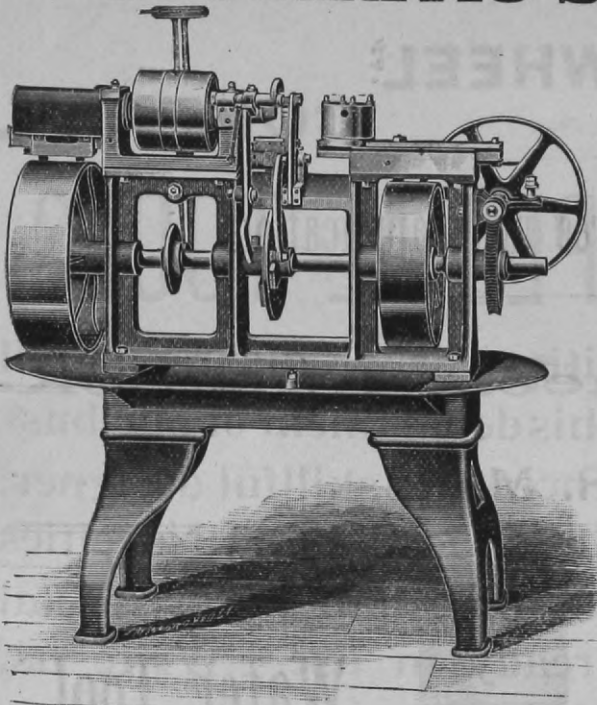
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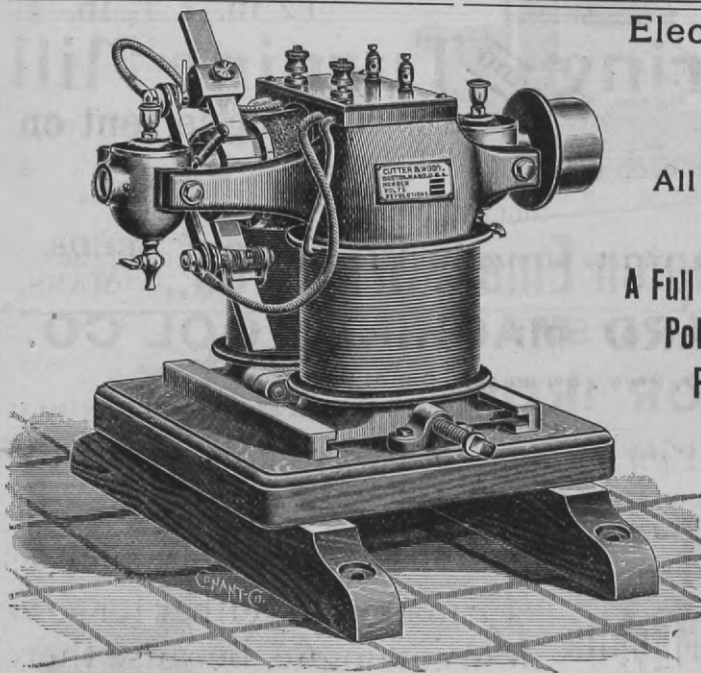
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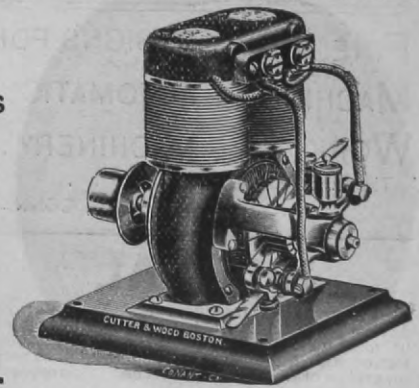
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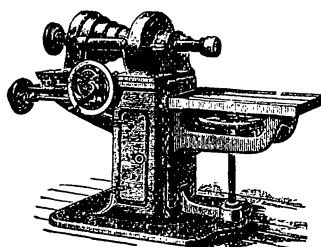
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16 in. x 16 in. x 12 in. Belden. (Crank).
16 in. x 16 in. x 3 ft. Pratt & Whitney.
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24 in. x 24 in. x 6 ft. Whitcomb.
36 in. x 34 in. x 16 1/2 ft. L. W. Pond.
51 in. x 45 in. x 15 1/2 ft. New Haven.

SHAPERS.
6 in. Crank. Boynton & Plummer.
11 in. Crank. Bement.
12 in. Friction. Hendey.
13 1/2 in. Crank. Trav. Head. Fitchburg.
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70 in. x 16 1/2 ft. Horizontal.
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60 in. 96, Niles Pulley Lathe.
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WILL BUY
16 in. x 6 ft. Engine Lathe. Good order.
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Fly wheel 18 ft. x 44 in., with belt and counter-shaft.
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Feed to Table for Butt Drilling.
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28 " 5 and 8 " "
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60 " 20 " "
72 " 25 " "
9, 12, 16, 24 and 26 in. Stroke Shaper.
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Hyd. Riveting Machine.
" Crane, Both A.I.
Punch and Shear.
Plate Planer.
11 in. x 6 ft. Eng. Lathe.
14 " 6 " "
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24 in. x 10 ft. Eng. Lathe.
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32 " 16 " "
35 " 13 " "
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57 in. Double Head Driving Wheel Lathe.
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Special lot of NEW ENGINE LATHES

13 in. x 5 ft. 17 in. x any length bed.
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MACHINE TOOLS, SPECIAL PRICES;

Planer 29' x 27' x Planes 7'. Good. \$325.
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NEW AND SECOND-HAND MACHINE TOOLS.

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14 in. x 6 ft. Lodge & Davis.
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PLANERS.
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SHAPERS.
15 in. Crank.
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3 Each 12 in. & 15 in. Lever and screw movement to turret.
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Second-hand Tools.

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- 1 13 x 6 Pratt & Whitney Lathe.
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- 1 16 x 6 Bogart Lathe.
- 1 18 x 6 Putnam Lathe.
- 1 18 x 8 New Haven Lathe.
- 1 20 x 12 Blaisdell Lathe.
- 1 21 x 8 Lodge & Davis Lathe.
- 1 24 x 12 Lodge & Davis Lathe.
- 1 30 x 23 Sellers Lathe.

PLANERS.

- 1 22 x 23 x 4 Whitcomb Planer.
- 1 24 x 24 x 5 Steptoe Planer.
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- 1 80 lb. Long & Allstatter Helve Hammer.
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SECOND-HAND MACHINERY.

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- All kinds of Iron and Wood Working Machinery.

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- ENGINES, Horizontal and Vertical. All types and sizes up to 2000 H.-P.
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Fine condition, various sizes and gauges.

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Planers, Drills and Lathes, good as new, for cash.

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WANTED.

To furnish reasonable estimates on specialties in light metal work.

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- 1 36 tons Stan. Gauge Pass. Loco.
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DOUBLE CORLISS CONDENSING ENGINE, 600 H. P., One 15 inch by 42 inch Corliss Engine, 125 H. P. Double Automatic Engine, 350 H. P. two 100 H. P. Phoenix Automatic Compound Engines, 45 and 5 H. P. Westinghouse Engine, one 80 H. P. Beck Engine, one 7 x 7 Southwark Automatic Engine, one 4 H. P. Otto Gas Engine, 100, 200, 300 and 500 H. P. Feed Water Heaters, 30 to 100 H. P. Return Tubulars, 70 H. P. Locomotives, 60 H. P. Vertical Boilers, good for 100 pounds.

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WE WANT TO BUY SCRAP,

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PLANERS.

- 20 in. x 20 in. x 5 ft. Ames.
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- 24 in. x 24 in. x 6 ft. Whitcomb.
- 24 in. x 24 in. x 5 ft. Putnam.
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Also a large number of other machines. Write for complete list and detailed description.

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BAKER BLOWERS, Nos. 3, 4, 5, 5 1/2, and 7 1/2.
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DAVID W. POND PLANER, 26 in. x 26 in. x 8 ft., latest pattern.
9 HEWES & PHILLIPS LATHES, from 12 in. to 20 in. swing.
A variety of Engines, Boilers, Pumps, Tanks, Crushers, Compressors, Rock Drills, &c.
Name your wants.

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Planer 28 in. x 24 in. x 7 ft. New.
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Lathe, 52 in. swing, 40 ft. long, triple geared.
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Five hundred iron pulleys 10 ft. dia. and less.
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- 32 x 48 Vertical, 25 ton wheel
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- 30 x 30 " 20 " "

Also Rotary Squeezer, Rail Shear, Scrap and Bar Shears, 12 in. Bar Mill, 20 in. Muck Mill, 30 in. Plate Train. One Structural Jib Crane, 20 tons cap. Address

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We have in stock about 1000 feet of best quality 2 1/2 in. four ply water hose, which we will sell at 35¢ per foot (price of 2 in.), with couplings, thread to suit regular 2 in. hose coupling, or to fit 2 in. wrought iron pipe. Address

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SECOND-HAND MACHINERY.**ENGINE LATHES.**

10 in., 11 in. and 13 in. Swing, 4 and 5 ft. Bed Lathes, Reed, Prentice and L. & M.
15 in., 16 in., 18 in., 19 in. and 20 in. Swing, 6 and 8 ft. Bed Lathes, Dustin, Pond, Young, Fiffeld and Bullard.
24 in., 26 in., 28 in., 32 in. and 36 in. Swing, 10 ft., 16 ft. and 18 ft. Bed Lathes, Fiffeld, Dustin, Blaisdell and Perkins.

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1 17 in. x 17 in. x 30 in. Hand Planer.
1 16 in. x 16 in. x 3 ft. Crank Planer.
1 17 in. x 17 in. x 3 ft. L. & M. Planer.
1 20 in. x 20 in. x 4 ft. L. & M. Planer.
1 24 in. x 24 in. x 6 ft. Pease Planer.
1 27 in. x 27 in. x 5 ft. White Planer.
1 60 in. x 60 in. x 22 ft. Heavy Planer with 4 heads.
1 60 in. x 60 in. x 22 ft. Hepworth, 1 head.
1 8 ft. Boring and Turning Mill with pulley attachment.

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2 20 in. Drill Presses, Prentice & Davis.
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3 Slate Drills, 1 one-spindle, 2 two-spindle.
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6 bench Drills.
1 50 in. Heavy Geared Post Drill.
1 each No. 2, 3 and 4 Garvin Gang Drills.

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15 in. Stroke, Smith.
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1000 tons 60 lb. Steel.	50 tons 35 lb. Iron.
150 " 60 lb. "	150 " 30 lb. "
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150 " 52 lb. Iron	60 " 20 lb. "
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250 " 40 lb. Steel.	Rails.

27 different gauge second-hand locomotives.
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1000 tons relaying 60-lb. Steel T Rails, 500 tons relaying Steel Street Rails, side bearing, 35 to 47 lbs. sections. Also 3 tanks 7 1/2 ft. diameter, 10 ft. high.

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Of the Valuable

Machine Shop and Patent Saw Works,

of the estate of Gustave Ehrhardt and Gustave Ehrhardt & Sons—near Homewood Station, on P. R. R., to be sold by order of the assignee at public sale, on Wednesday, October 31, at 2 o'clock P. M. on the premises. The site fronts on the P. R. R. about 256 feet and is about 100 feet in depth, having side track and switch from the main line, on which is erected a substantial brick building, used as machine shop and saw works, and including engine, boiler, drill presses, planers, shaping, boring and drilling machines, cold sawing machines and saw blades (Ehrhardt's patents), shafting, etc., and a large lot of other valuable machinery pertaining to a first-class machine shop. Belting, office furniture, etc., etc. There is also a frame building on the premises, used as a warehouse and pattern shop, etc.

The property will be sold subject to a certain mortgage of \$6500 thereon, and the taxes for 1894. Five per cent required to be paid down when the property is sold. JUSTUS MULERT, Assignee.

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with first-class reference, capable of taking charge of foundry, wants a position, or would like to buy established foundry with trade for reasonable price. Address "C. E.," 18 Mechanic St., New Haven, Conn.

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We have just taken for sale a complete plant of a File manufacturing concern situated within an hour's ride from Boston.

It consists of a number of the Hess cutting machines, helve and upright Bradley hammers, shears, a complete outfit for heating by oil, with necessary tanks, pump, pipes, gauges, etc., about a carload of grindstones (face 18 in., diameter 80 in.), a number of tons of file steel of different shapes, which have never been cut or worked, also a lot of forged blanks. In fact, the plant is complete in every way and has been run but a very short time and everything is in fine order. This outfit must be disposed of at once and we propose to sell it in a lump or by pieces, as may seem most advantageous.

If you are interested, kindly let us hear from you, and promptly.

HILL, CLARKE & CO.,

156 Oliver St., Boston, Mass.

FOR SALE. RIDGWAY BALANCED STEAM HYDRAULIC CRANE.

Length of arm 14 ft. 11 in.; height in the clear, 14 ft. 4 in.; cylinder 12 in. diameter, capacity 1 ton and less. Cost \$400. Never been used, as it was too light for our requirements. Will sell at very low figure. Address

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Located in Chicago, within easy teaming distance of city warehouses and large consumers. Railroad facilities, first-class, connecting with every road entering the city. Well equipped, having one 10 in. and one 18 in. three-high train and an 18 in. muck train. Capacity, 75 tons a day. Mill can easily be adapted to specialties. Owners will take part pay in product. Address

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These buildings were erected for galvanizing and barb wire plant, and more recently, for several years, have been in the occupancy of The National Switch & Signal Co. They form part of the plant of The Stewart Wire Co., being separated from its main plant by the Lehigh Canal. Affords a most desirable opportunity for industry using wire in any of its forms and is an exceptionally fine location for manufacture of any character.

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A N EXPERIENCED SALESMAN with extensive acquaintance among the larger buyers of builders' hardware, calling frequently on the trade in Philadelphia, Pittsburgh, Baltimore and Boston and having office in New York City, as agent for a first-class manufacturer, is anxious to represent an additional company. Address "E. H. W.," No. 1018, office of *The Iron Age*, 96-102 Reade St., N. Y.

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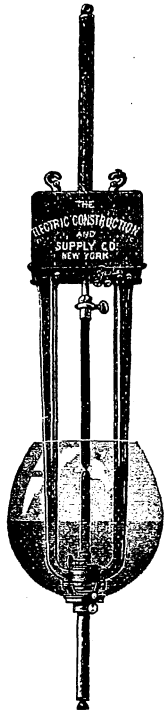
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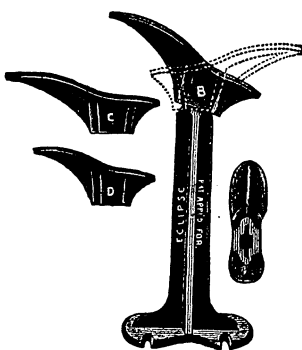
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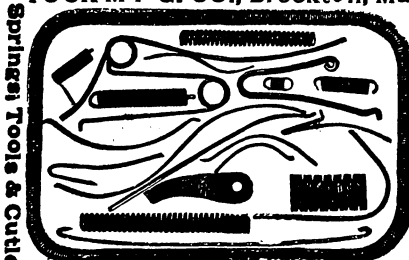
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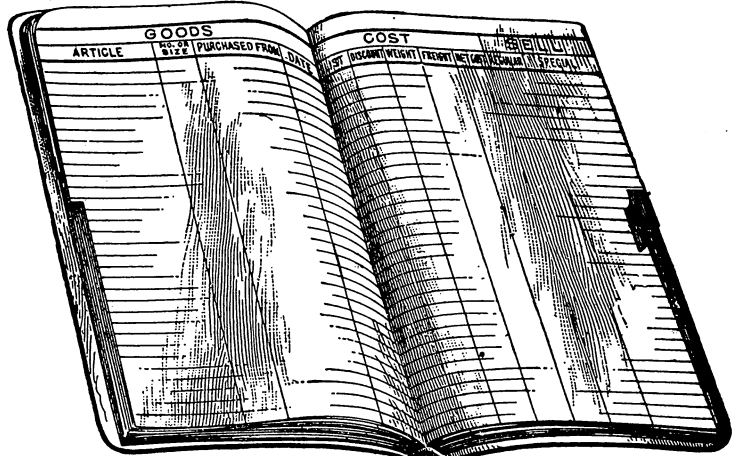
These Books are printed on paper of superior quality and bound in grain seal leather.

Columns are provided for the name and number or size, for noting from whom purchased, date of quotation or purchase, list and discount, and for entering freight expenses as an element of cost. Under the heading of selling prices, the regular and any special price, or remarks in regard to the goods are given place. This book goes into considerable detail in describing the goods and cost prices. It has been arranged in accordance with the views of many Hardwaremen whose methods are careful and exact.

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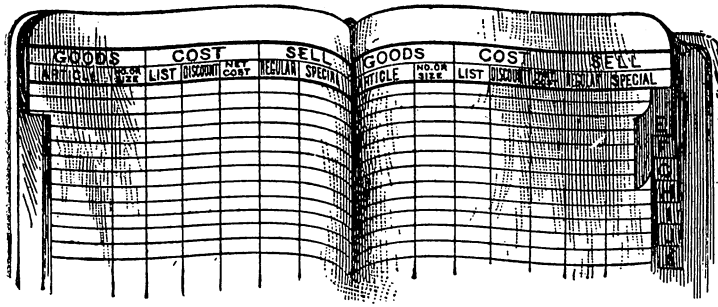
Hardware Price Book A.

In this book each page is complete, and the record of prices does not, as in Book A, run across two pages. Thus it accommodates a larger range of goods with much less detail in the record. It is adapted for office or store use, and by the use of familiar abbreviations, sufficiently large for the convenient and concise record of prices.

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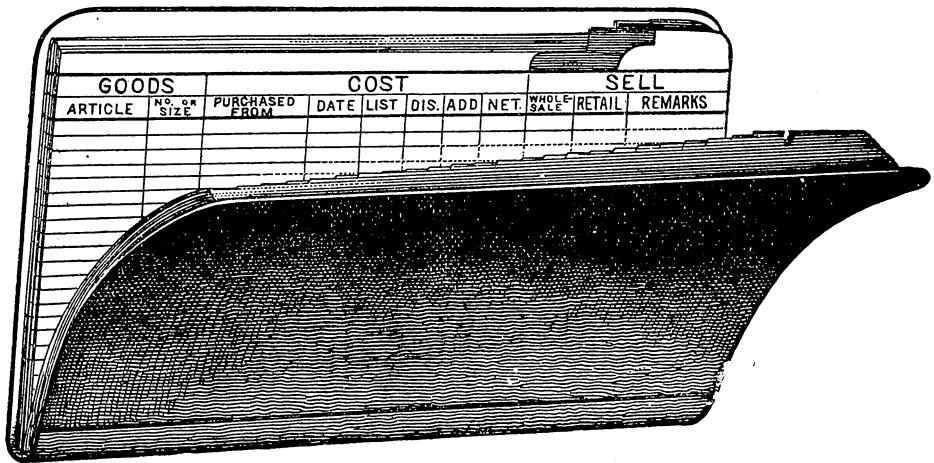
Hardware Price Book B.

The headings in Book C run across the top, in a line parallel with the hinge. In this way a very complete record can be kept on a single page. The details of weight and freight contained in Book A are omitted, and a single column headed "Add" given for the insertion of freight or other expenses which it is desirable to include in the cost. Under the selling prices space is left for the wholesale price, the retail price, and also for any remarks in regard to cost of the goods, desirability of pushing them, or other matters.

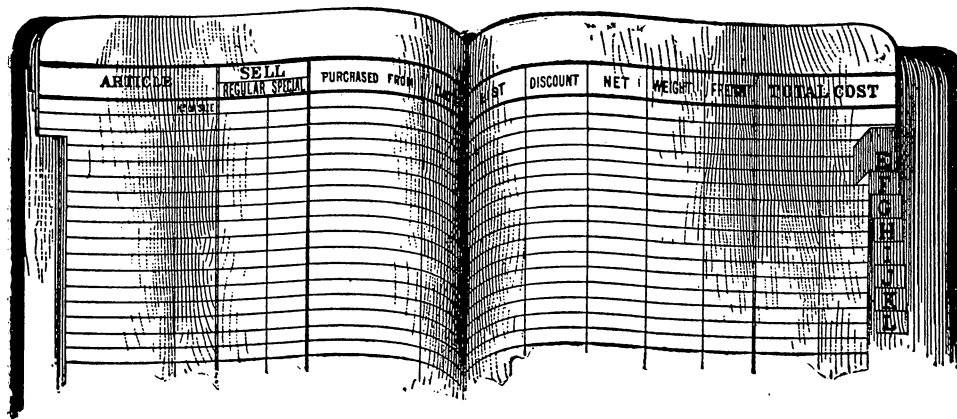
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Hardware Price Book C.



Hardware Price Book D.

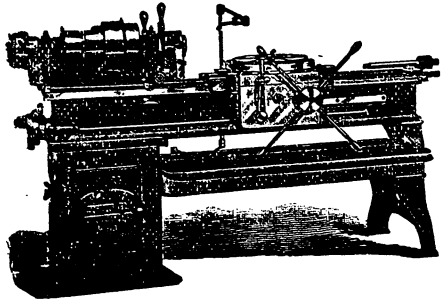
Price Book D will recommend itself particularly for desk and store use, and for salesmen on the road.

The name of the article, its number or size and the selling price are the first to meet the eye on the left-hand page, as embodying information desired when the selling price is required. The other headings follow in convenient order, by which a detailed memorandum regarding the goods may be kept, the whole being seen at a glance. A number of pages at the back of the book are arranged for memoranda, which will be found a great convenience. This arrangement is adapted to the requirements of the trade in this direction.

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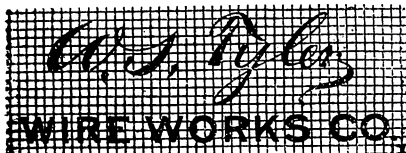


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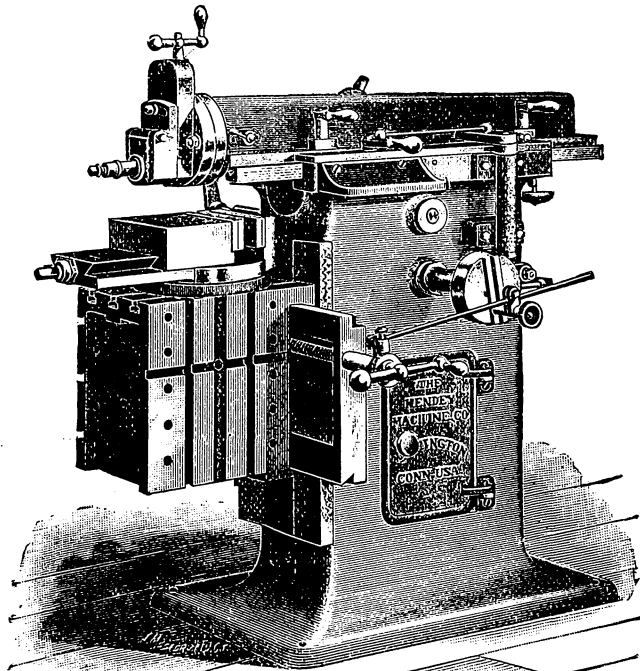
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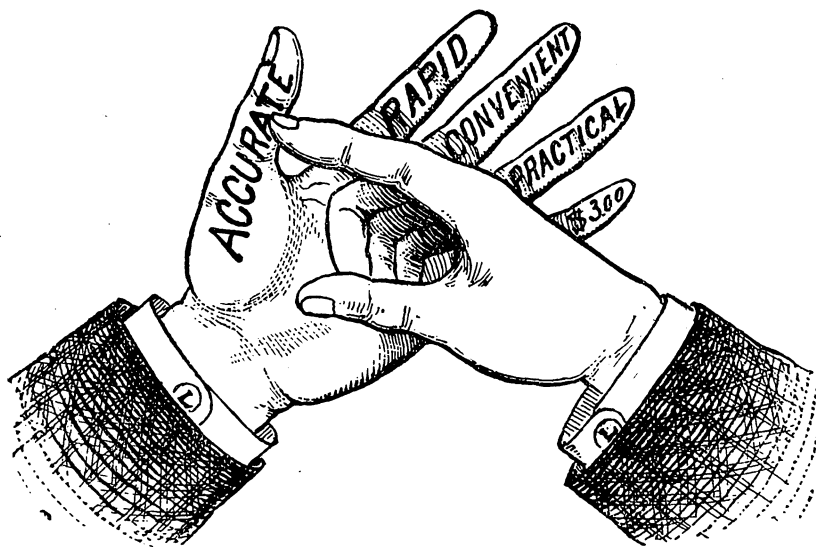
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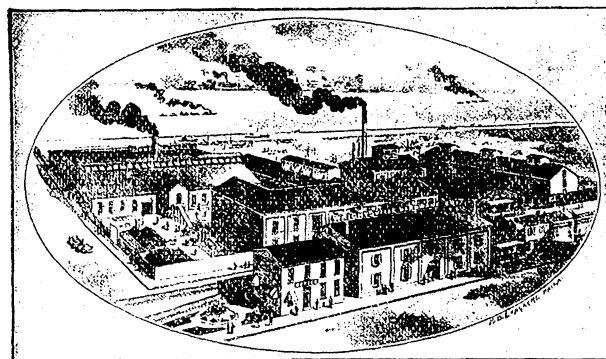
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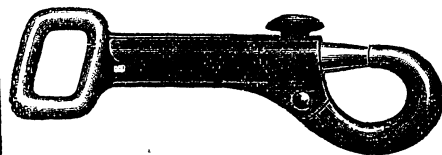
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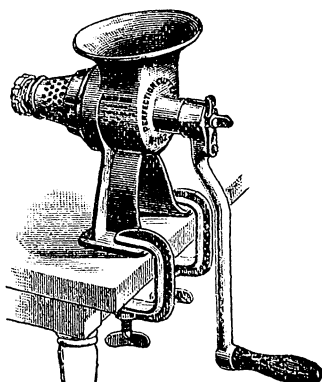
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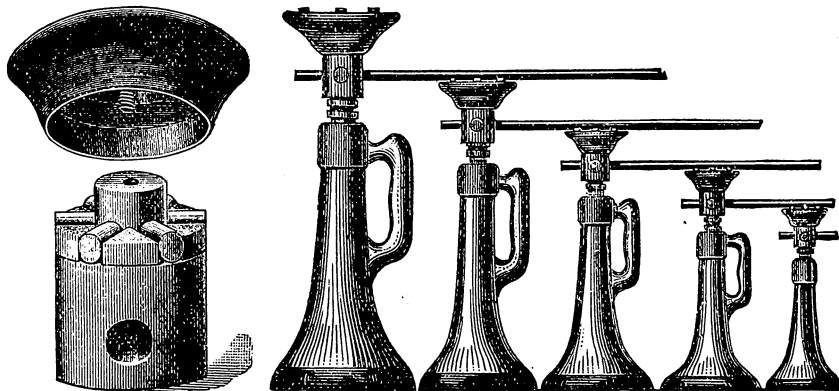
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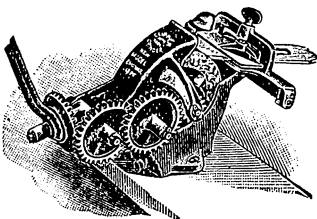
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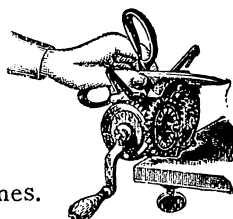


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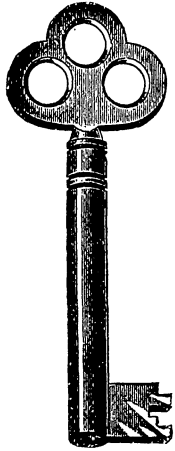
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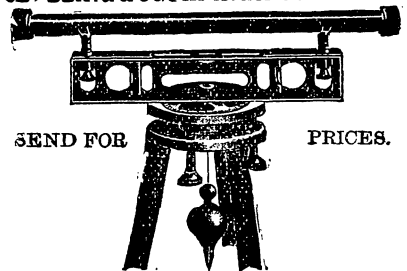
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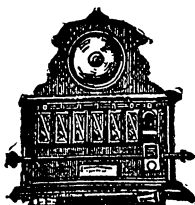
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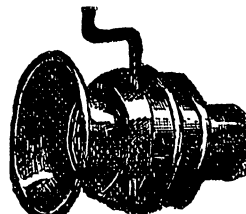
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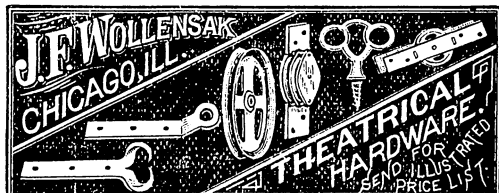
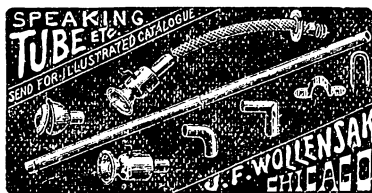
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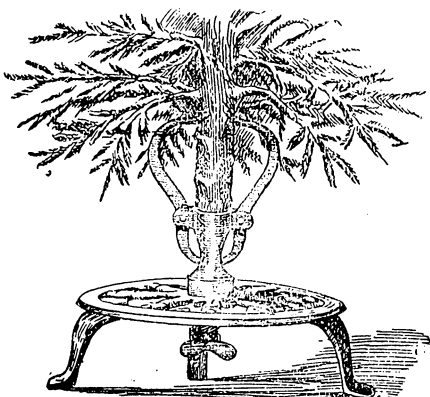
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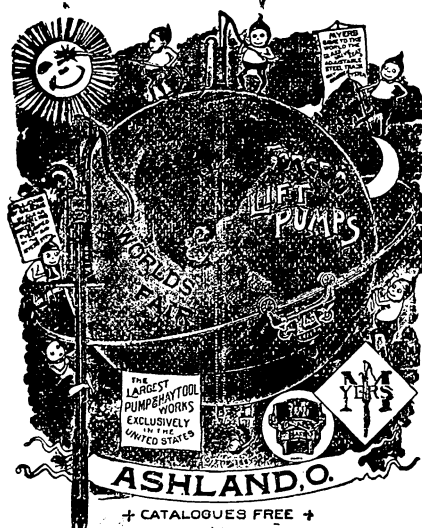
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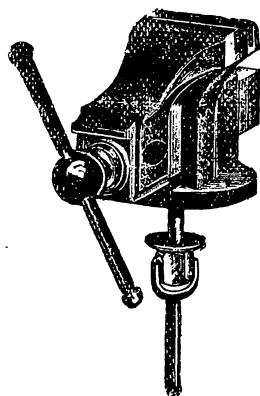


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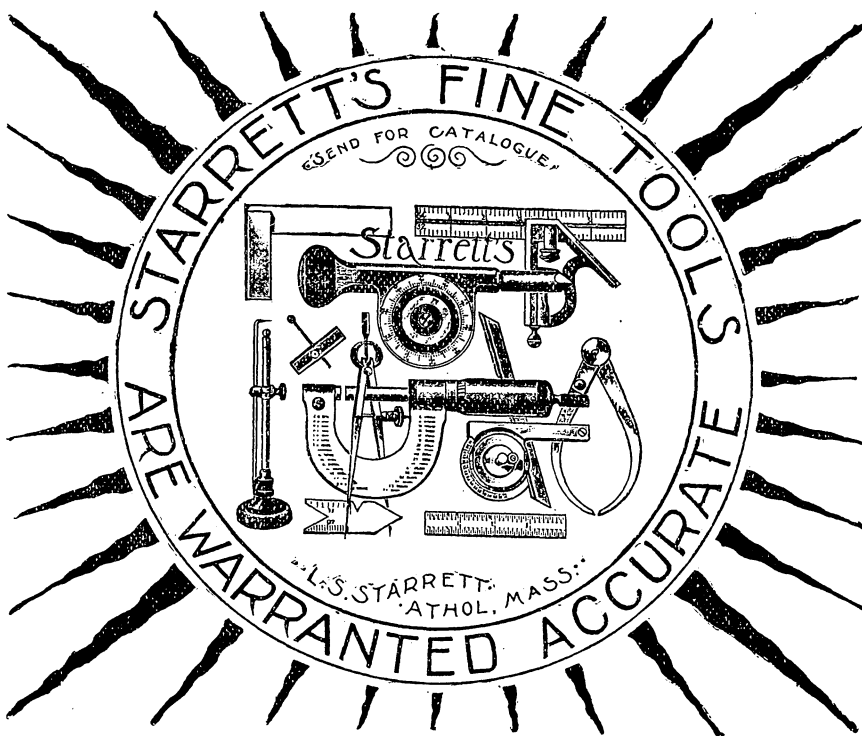
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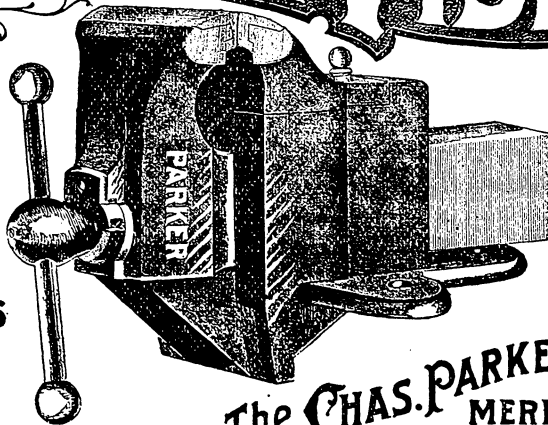
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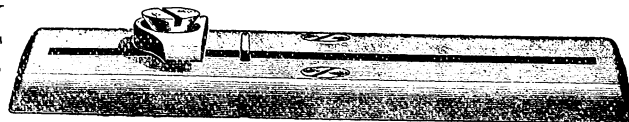


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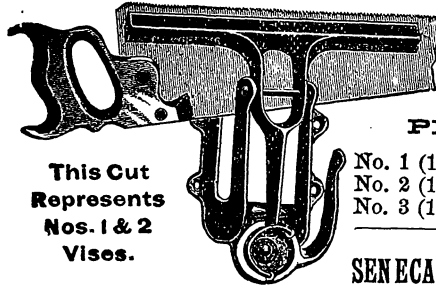
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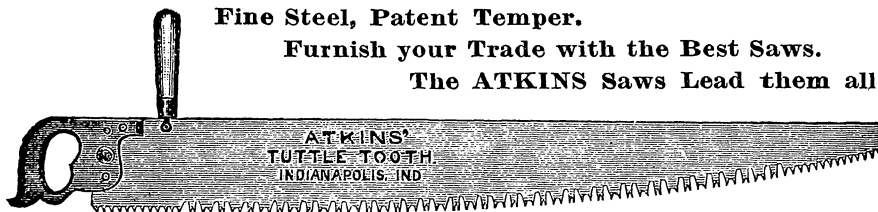
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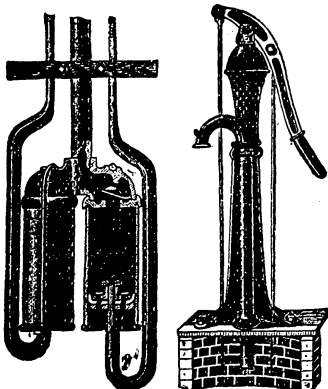
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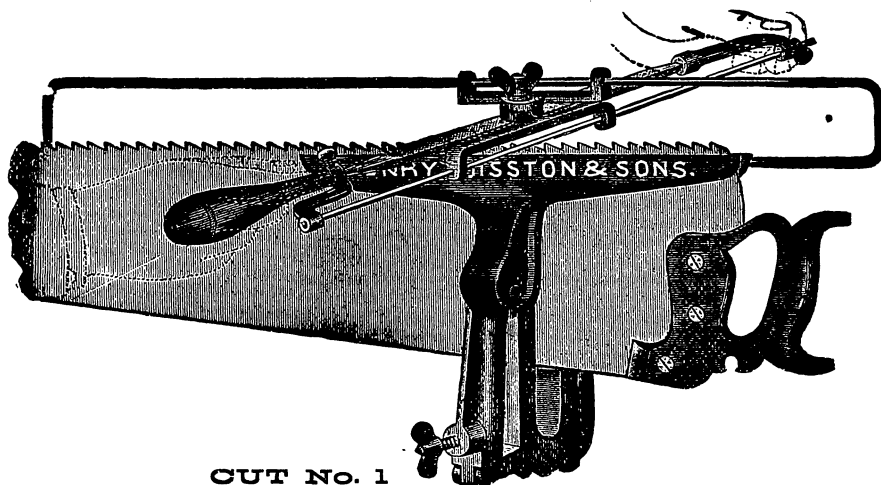
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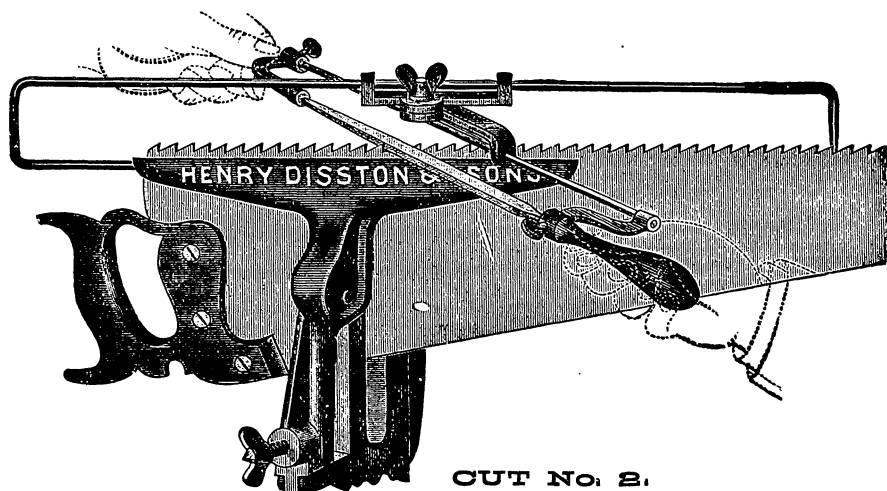
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Cut No. 1 shows a saw and the attachment in proper position for filing the first side, and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



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To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.


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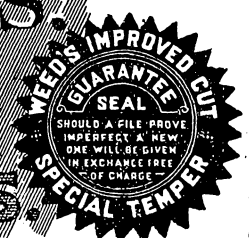


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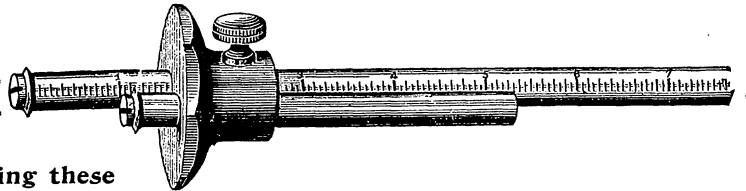


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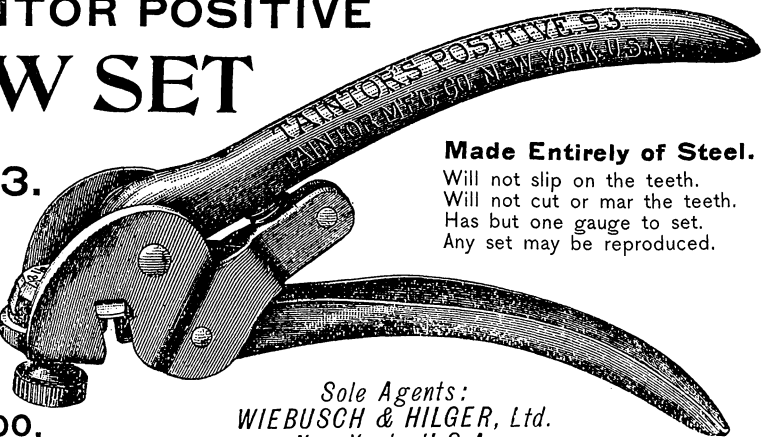
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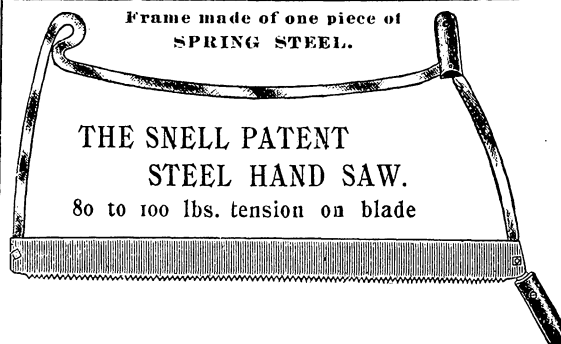
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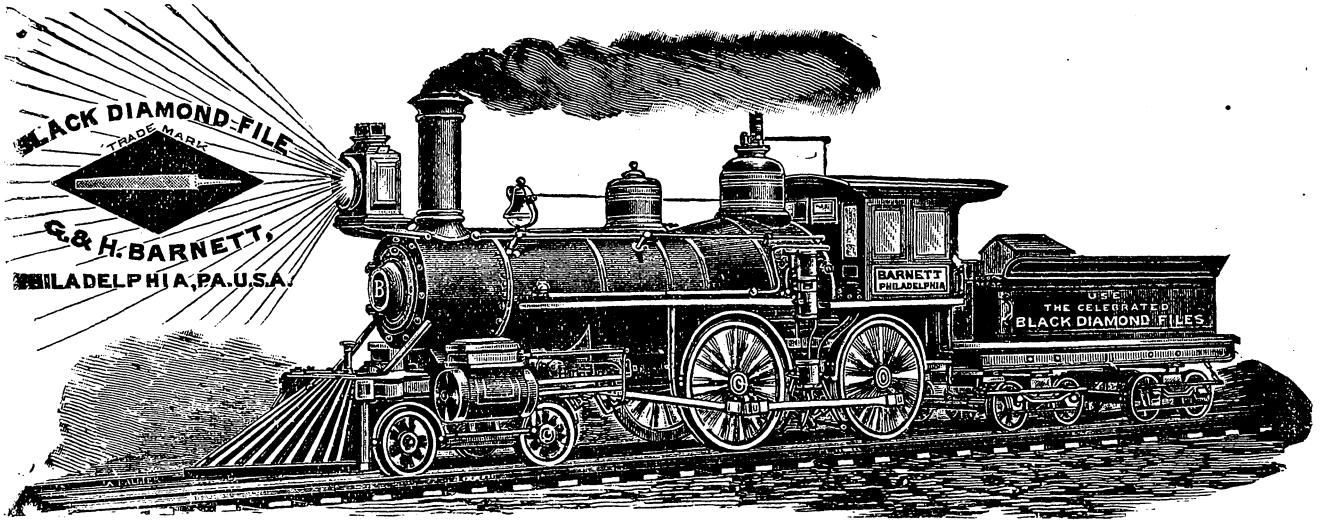
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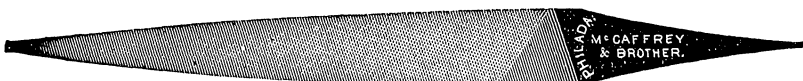
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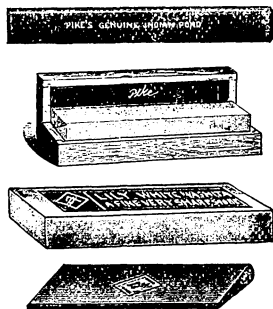
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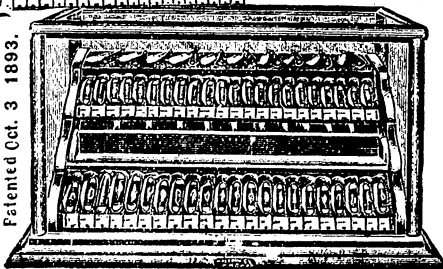
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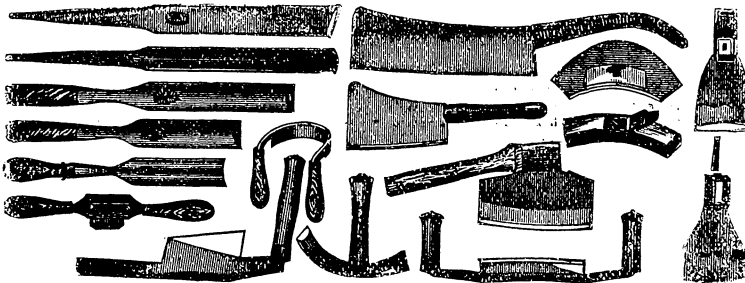


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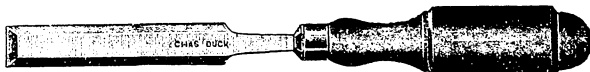
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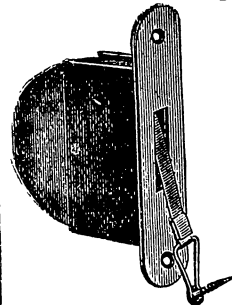
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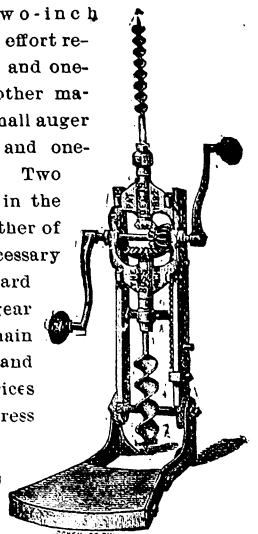
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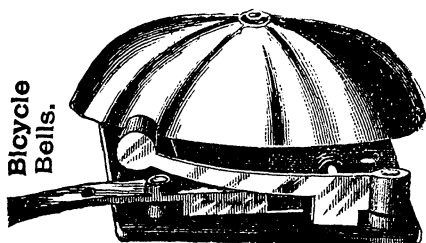
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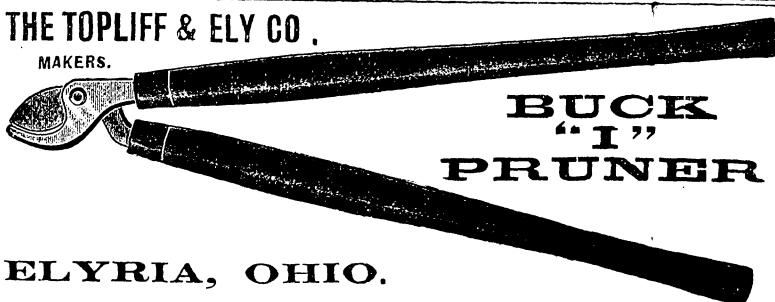


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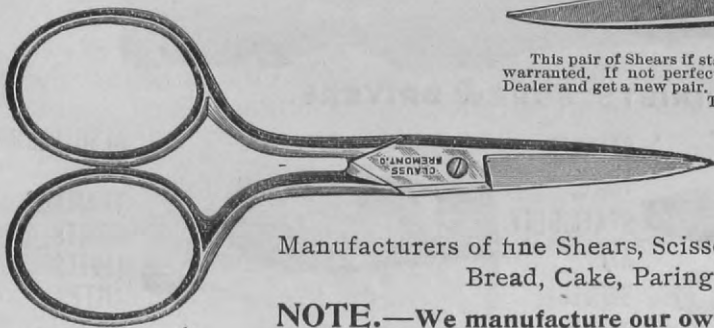
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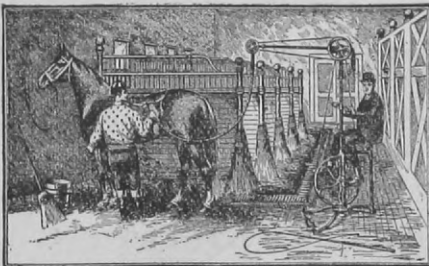
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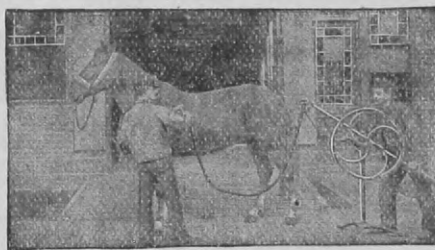
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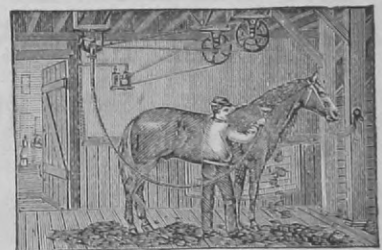
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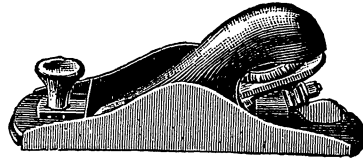
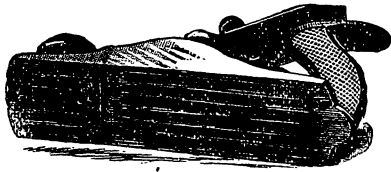
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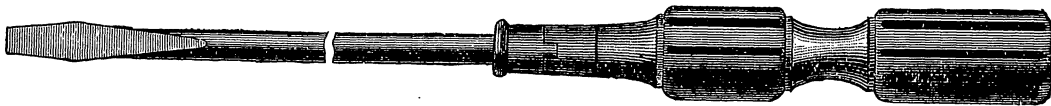
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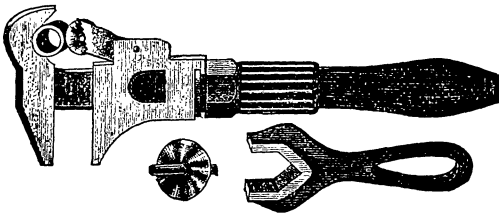


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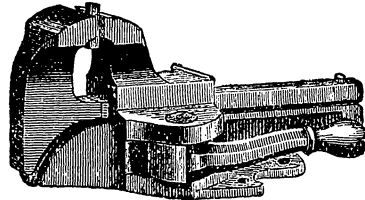


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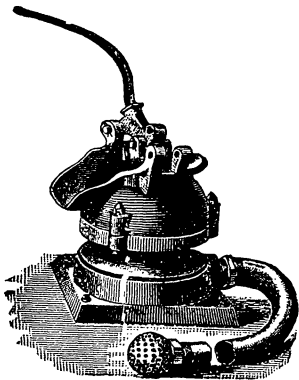
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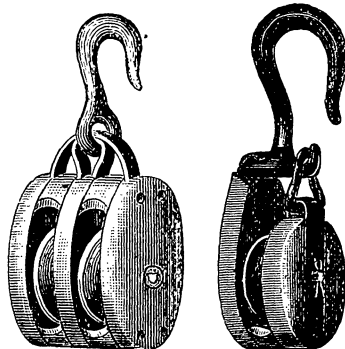
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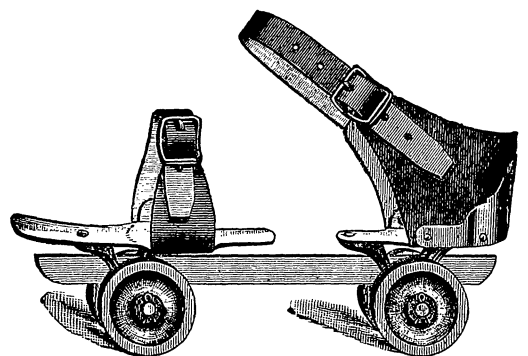


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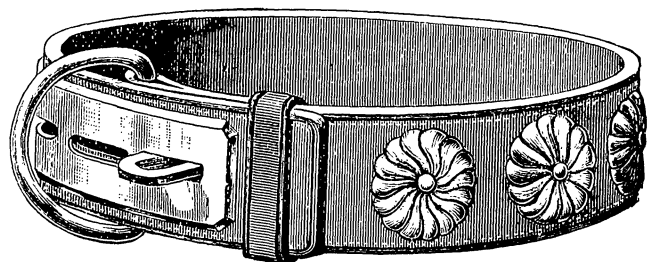
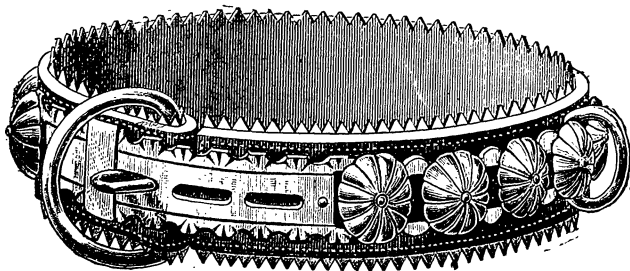
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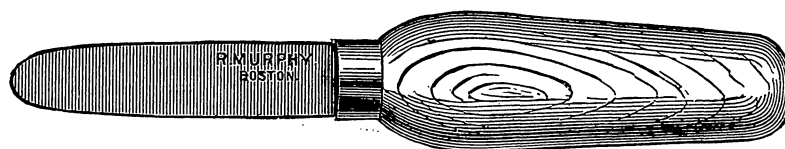
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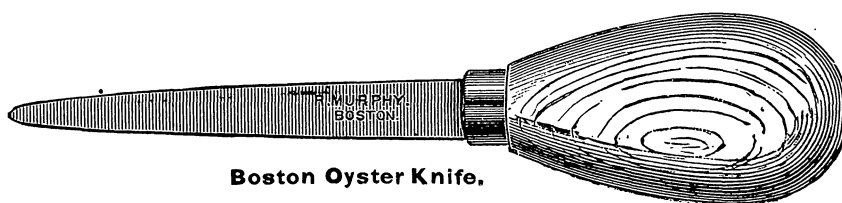
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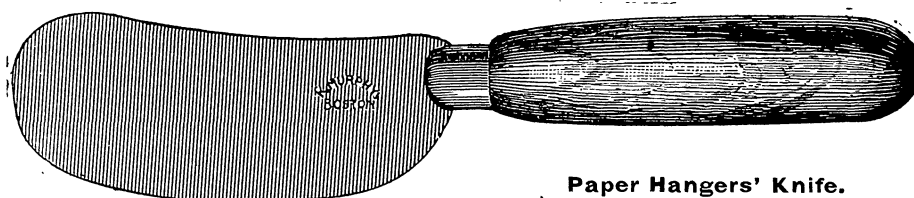
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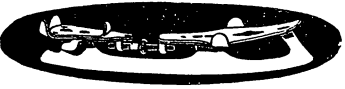
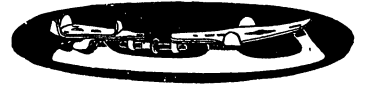
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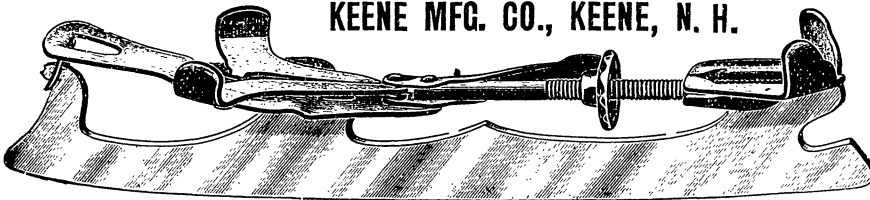
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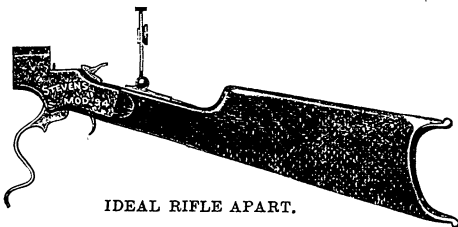
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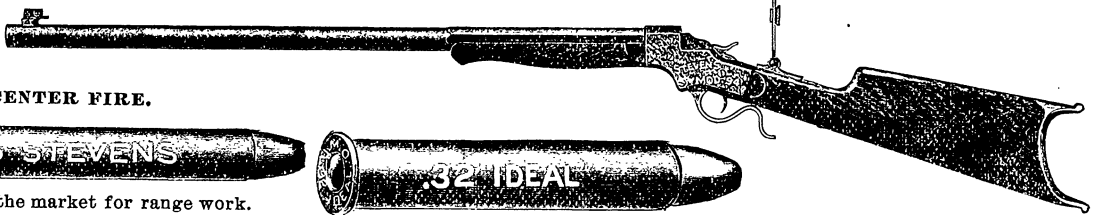


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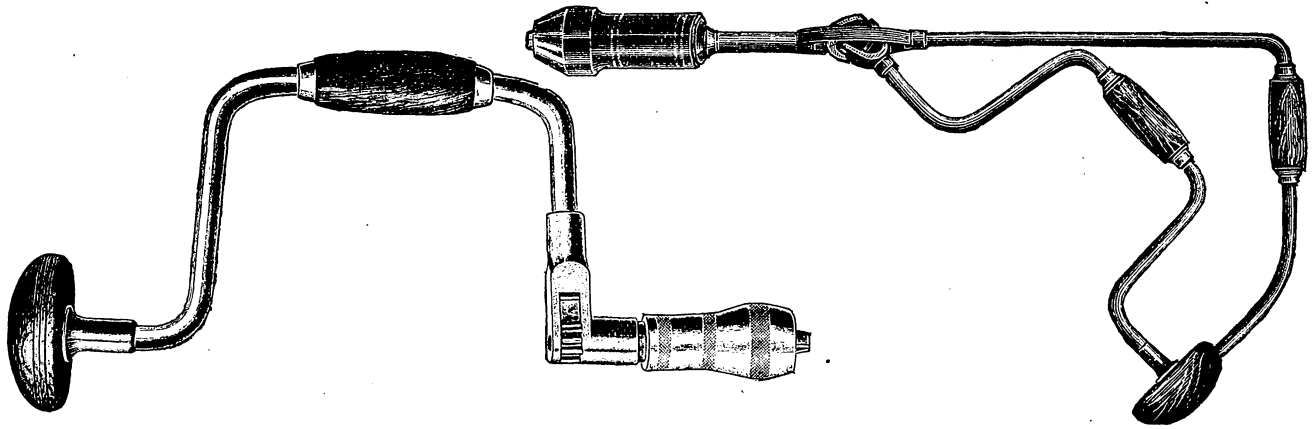
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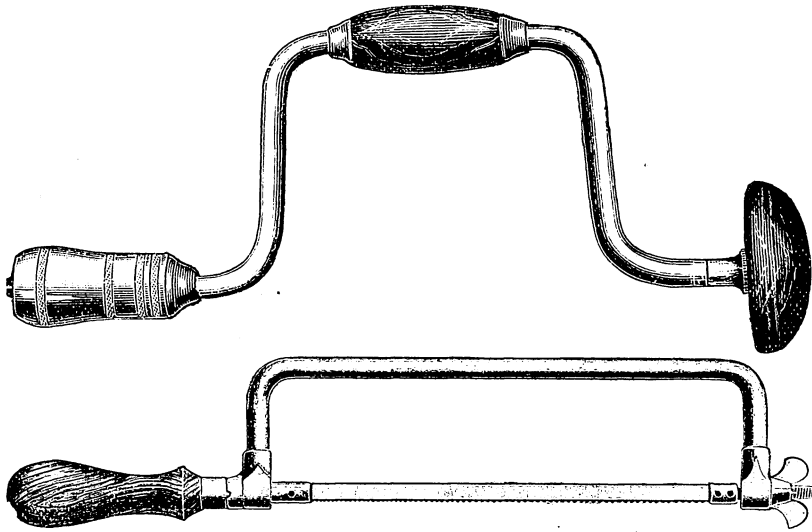
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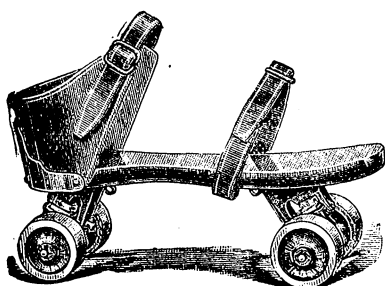
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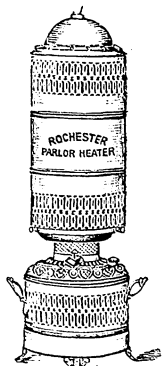
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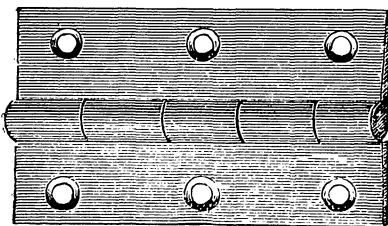
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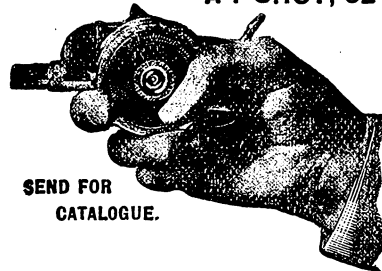
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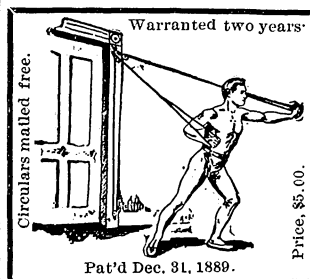
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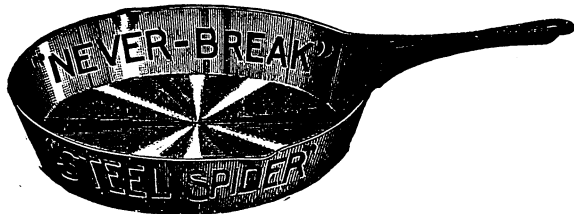
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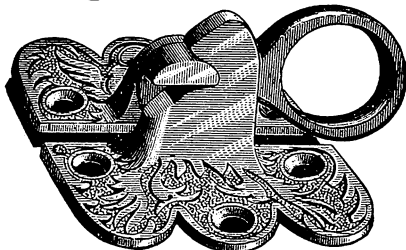
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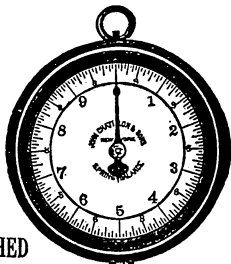
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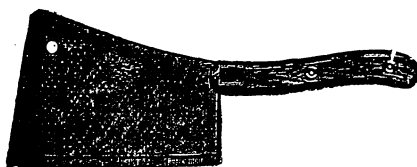


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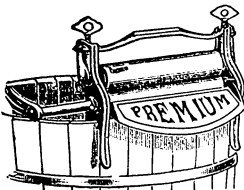
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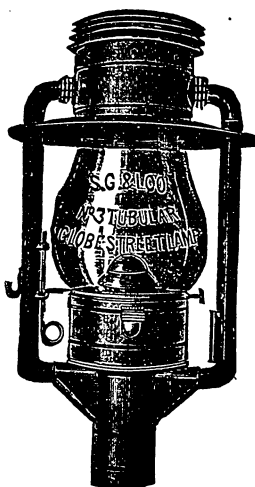
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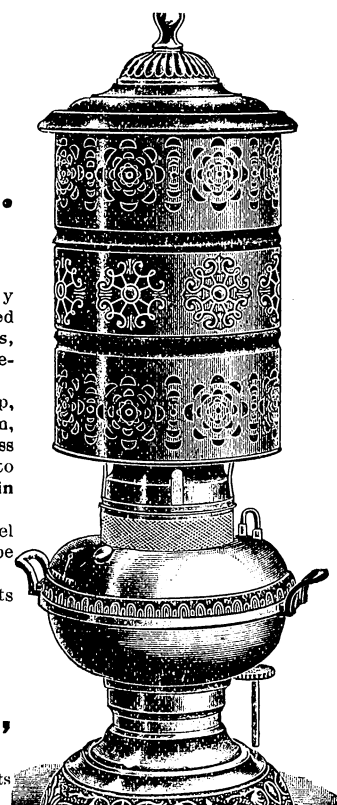
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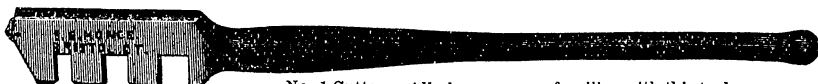
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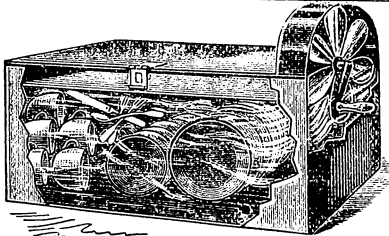


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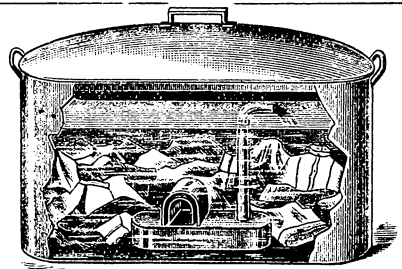
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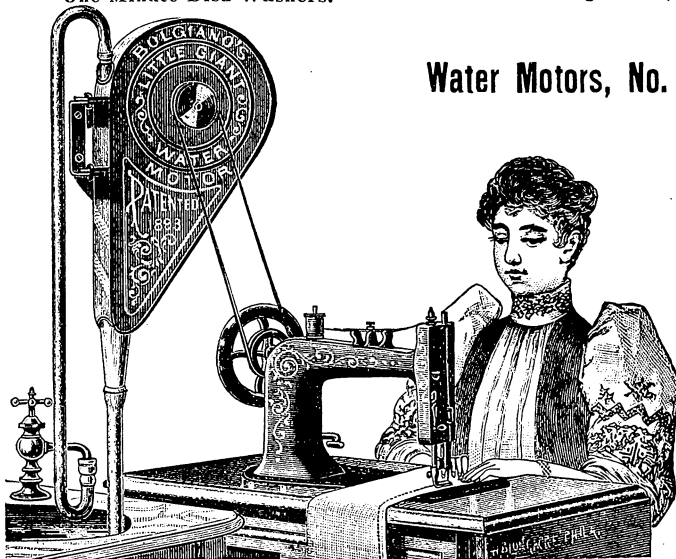
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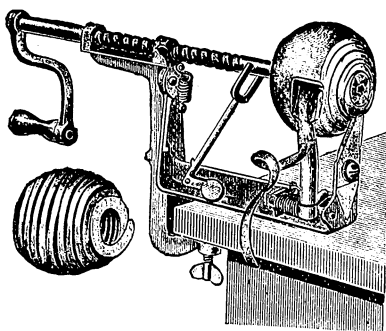
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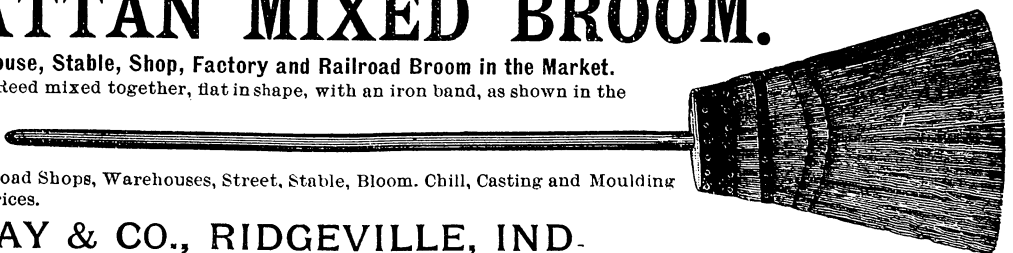
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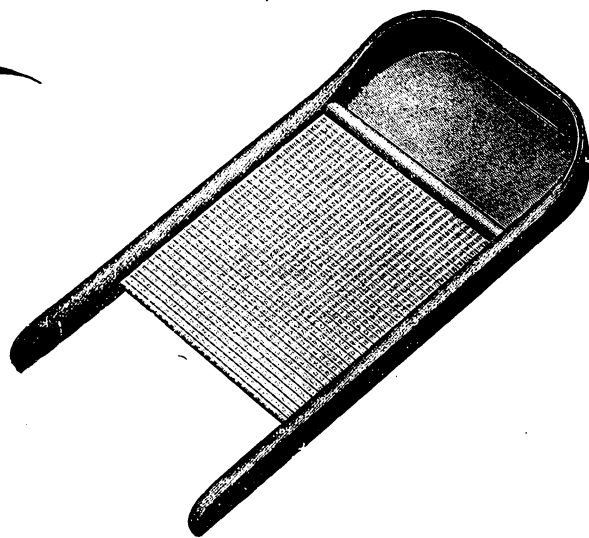
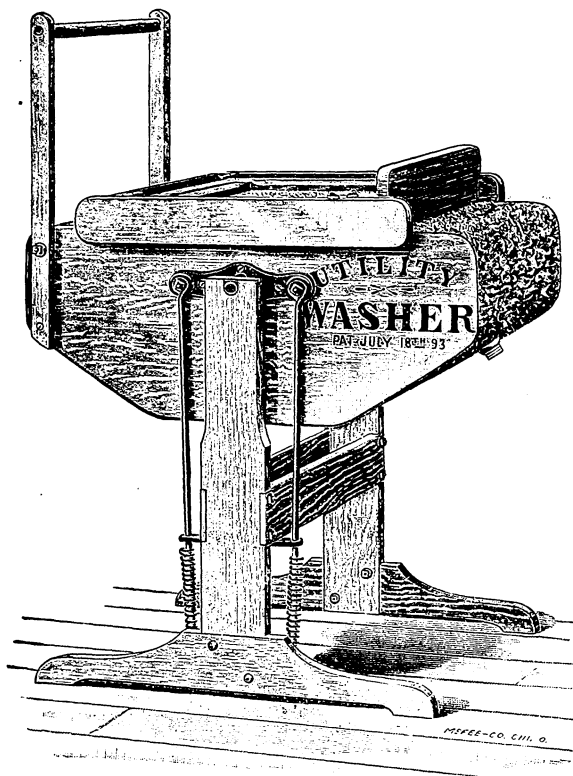
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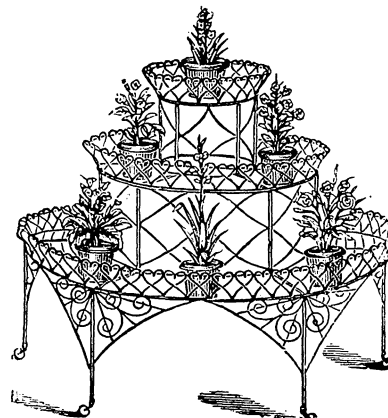
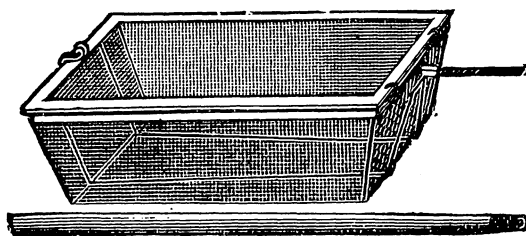
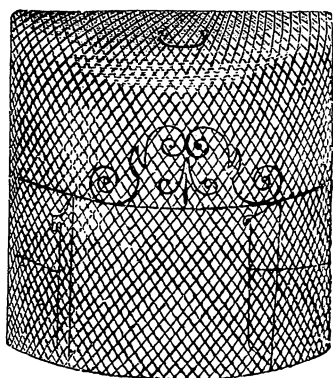


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Your customers can get along without both, but neither separately. The washer has the peculiarity of washing the clothes clean and not wear out either it or the operator. While the board is something entirely new yet thoroughly tested and proven the best made. Write for prices, please.

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MANUFACTURERS OF
Wire Guards, Corn Poppers, Flower Stands,
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Work, Railing of every description.
FIRST CLASS GOODS. LOW PRICES.
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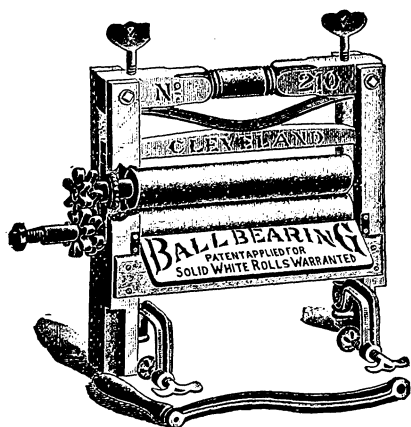
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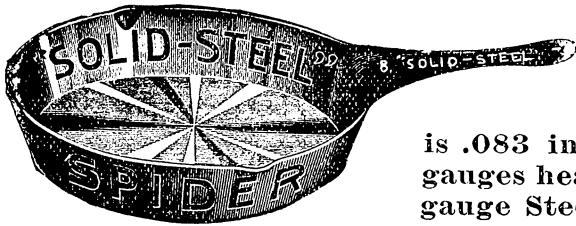
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Our Spiders and Griddles are made from No. 14 Stubbs gauge steel, which is .083 in. thick, and which is two gauges heavier than No. 14 American gauge Steel.



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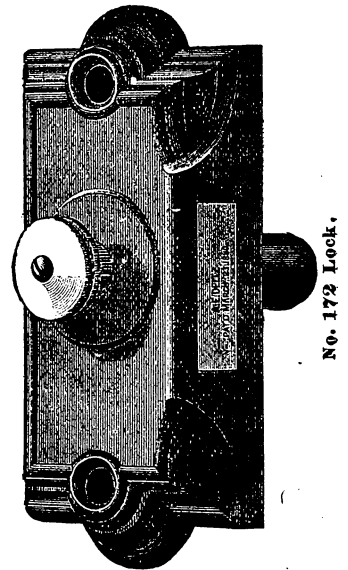
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We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

THE ONLY PERFECT STOVE TRUCK IN THE MARKET
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ONE SIZE FOR ALL STOVES
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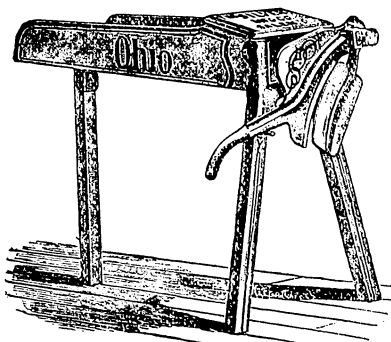
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Made either for Oil or Gasoline.

These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

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1894 PATTERN. PRICE \$5.00.

Simple, Durable, Handsome and Cheap.

It has an eleven-inch Oil-Tempered Sickle Knife which can be adjusted to take up all wear, thus giving a perfect shear cut at all times.

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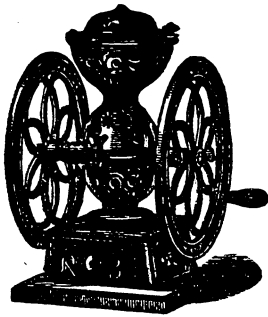
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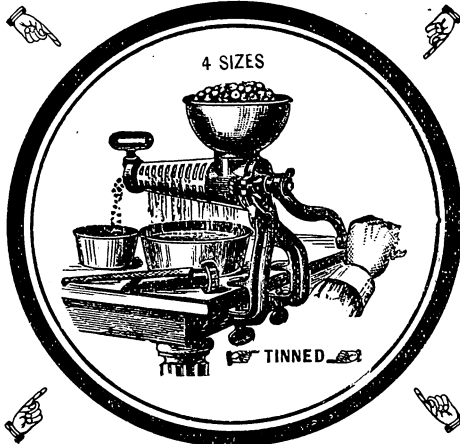
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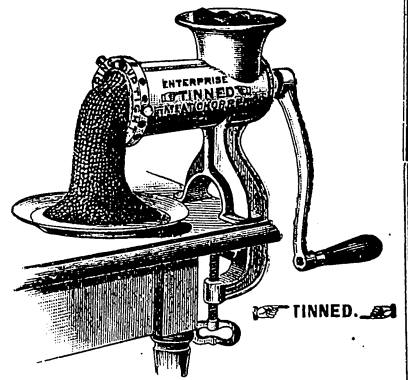
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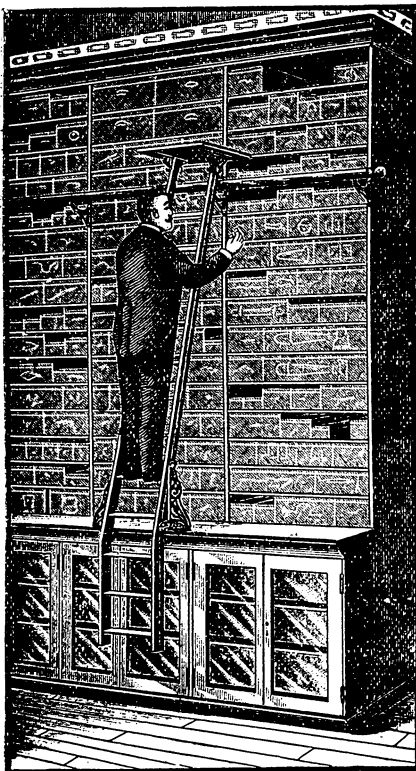


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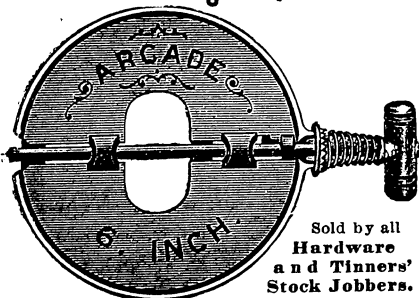
Especially adapted for Hardware Stores.



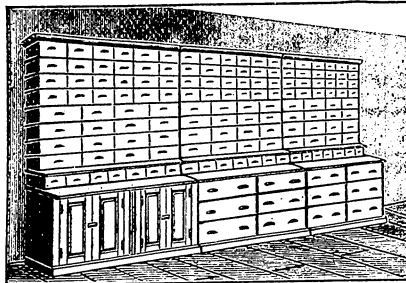
The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us.

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Made by Arcade Mfg. Co., Freeport, Ill.



Sold by all Hardware and Tinner's Stock Jobbers.



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THE WERNICKE SYSTEM OF STORE FIXTURES.

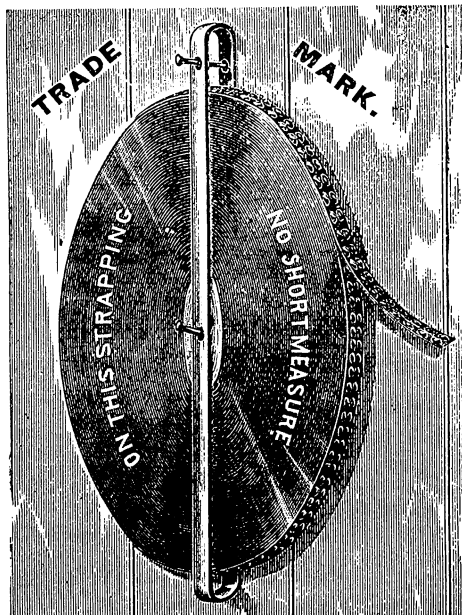
It is new, novel and unequalled for beauty convenience and economy.

Send for Descriptive Circulars.

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Manufacturers of General Store, Bank and Office Furniture,
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SHOWING REEL HUNG UP READY FOR USE.
SIX PATENTS,
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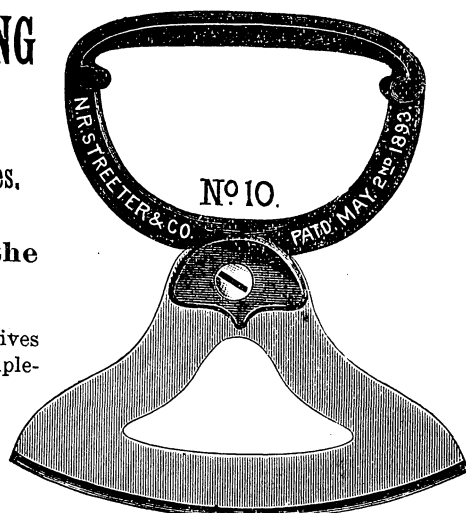
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Multiple Bladed Means Rapid Cutting.

These goods have become the
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Our line of Sensible Mincing Knives
covers all points where other Multiple-
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BLADES can be **REMOVED** when they
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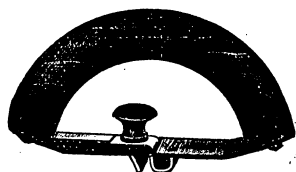
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N. Y. Office, W. H. JACOBUS, 90 Chambers St.

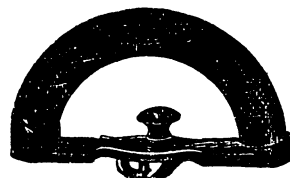


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The Steel Stretcher Handle,
for Mrs. Potts' Sad Irons,
in Hazel Wood only.
No. 110.

The Cleveland Wood Turning Co.,
710-726 Scranton Ave., Cleveland, O.

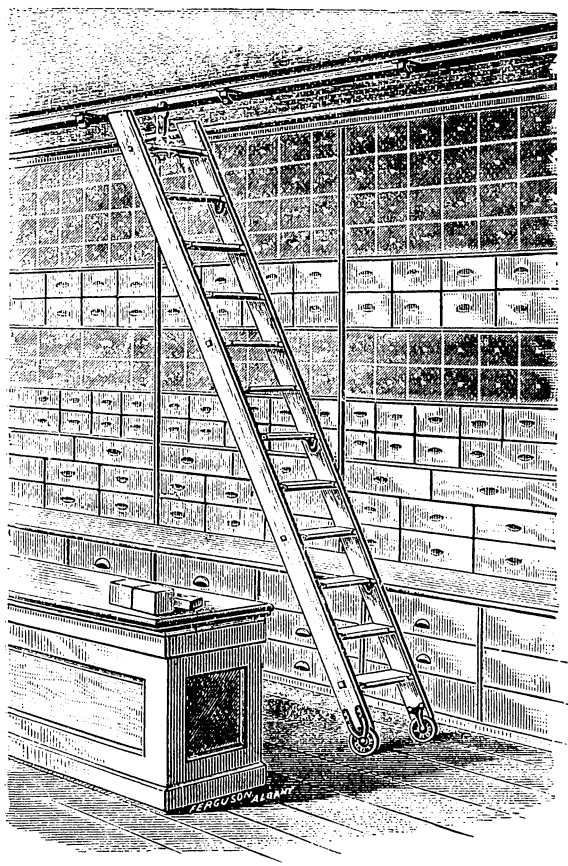
Special work in Handles and Wood Turning of all
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Hazel, Tinned, No. 20.

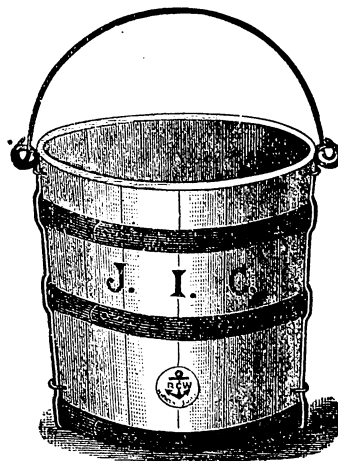
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The latest and best. Perfectly noiseless. Neat in ap-
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Manufactured by
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Patented August 26, 1886.

Made of Best Seasoned White Oak or
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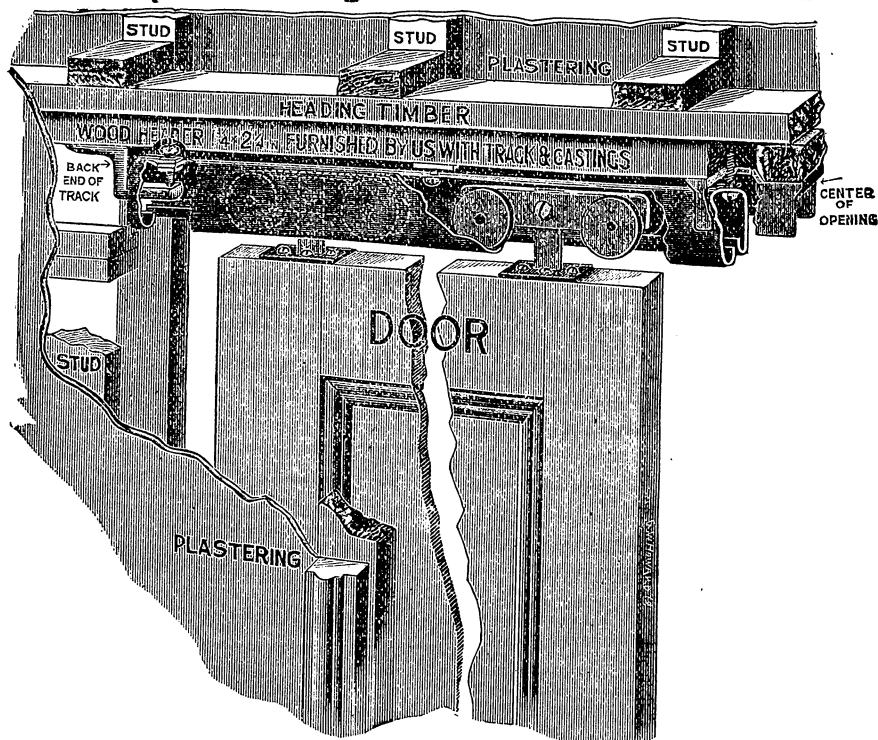
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Hoops cannot come off. Best stable,
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Prices quoted on application.

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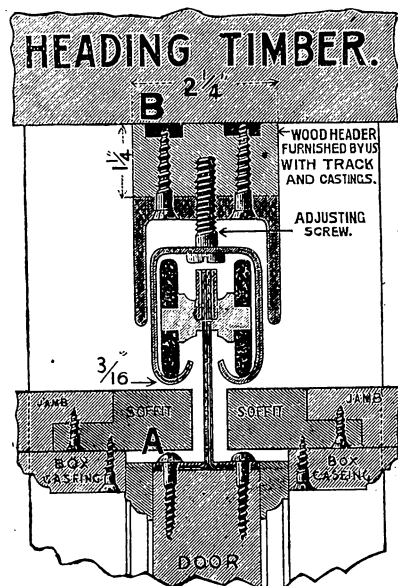
Door Hangers

— AND —

Easy
Running

STORE LADDERS.

Send a Postal Card for it.



Coburn Trolley Track Manufacturing Co.

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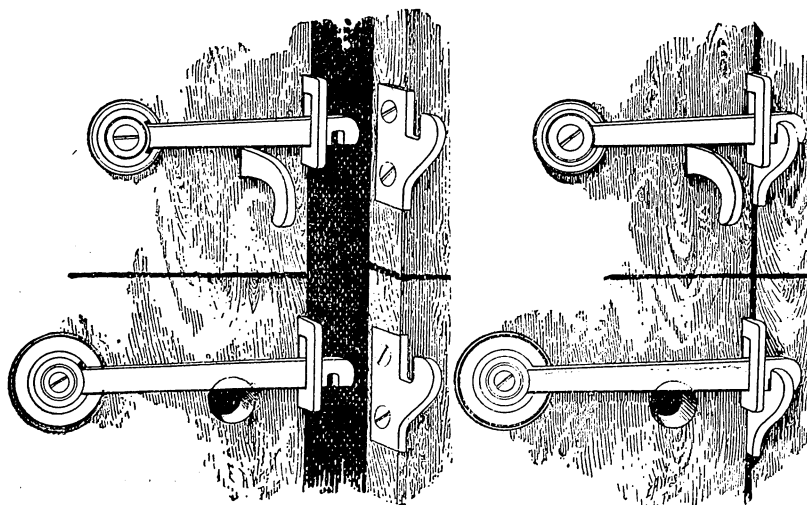
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are now prepared
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WARNER BURGLAR PROOF LOCKS.

The Cheapest, Strongest, Lightest Dead Rim Lock made.

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TO MANUFACTURERS AND
HARDWARE DEALERS.

FOR SALE

A New
Invention In
SLIDING DOOR LATCHES.

Pat. Nov. 26, '89.

These latches are for Stable Doors and Gates. By turning other side up can be used as a straight gate or thumb latch. Can be made as cheap as ordinary latches. Patent for sale, or will take partner with small capital on six patents in the hardware line.

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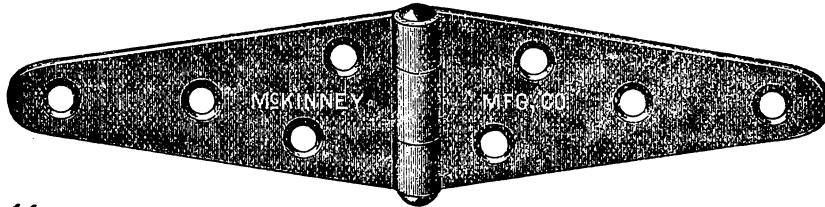
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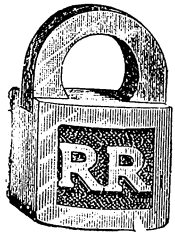
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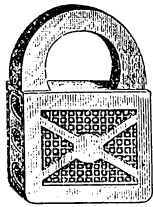


ORDERS FILLED
ON SIGHT.

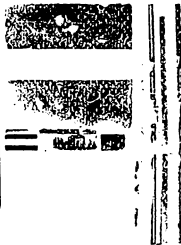
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Our goods are the most desirable in every respect. Send for catalogue and prices of our large and complete line.

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Ball For Stanley's Steel Butts.

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Washers

Doors hung with these Butts require no oiling, do not creak, work perfectly.

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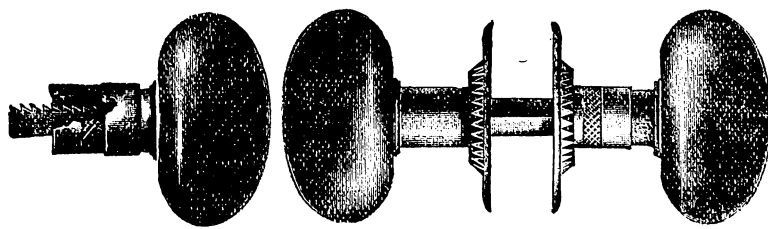
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SASH WEIGHTS.

KINGS COUNTY IRON FOUNDRY,

Office and Works, Nos. 86, 88, 90, 92 North 12th St.,
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Sectional cut showing construction of Knob.



Half size cut of knob as applied to door. No side screws or adjusting washers.

Don't you want your stock to represent the latest and most improved up to date Hardware? The Whipple Patent Door Knob is the latest and best Door Knob attachment ever made. Give it a trial. PERRY & WHIPPLE CO., New Haven, Conn.
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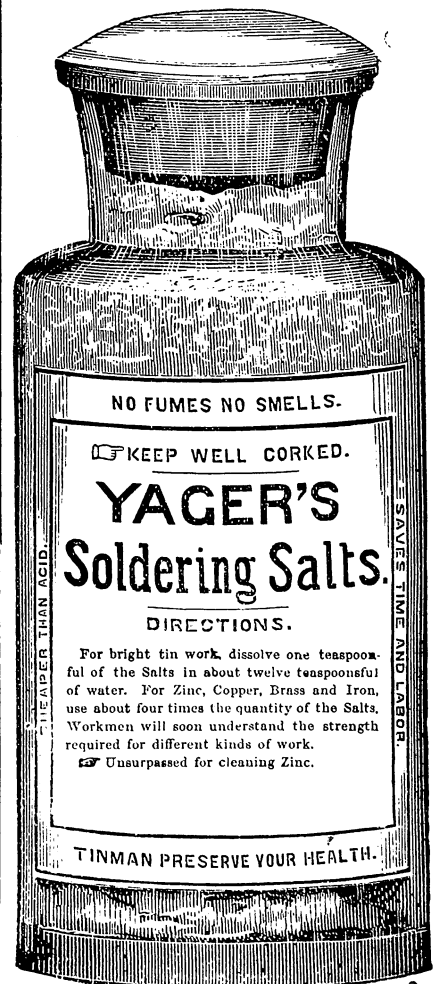
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Blind Hinges, Gate Hinges, Door Butts,
And other HARDWARE SPECIALTIES,
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You cannot afford to be without it

SOME YEARS AGO

We adopted for use in our Works the now justly celebrated YAGER'S SOLDERING SALTS. We soon found that it was a great success. We offered some of it to a few of our friends. They told some of their friends about it. The result was that we soon had a large business in the article. Our trade in it has continued to grow ever since. The sales are now immense. Some of the largest consumers of solder in the country (Tinware Manufacturers, Packing Houses, Electric Light Companies) use the Salts in large quantities. It saves time and labor; it is cheaper than acid. Unlike acid it emits no fumes or smells, which, besides being offensive, seriously affect the health of the unfortunate workman forced to use it.



NO FUMES NO SMELLS.

KEEP WELL CORKED.

YAGER'S
Soldering Salts.

DIRECTIONS.

For bright tin work, dissolve one teaspoonful of the Salts in about twelve teaspoonful of water. For Zinc, Copper, Brass and Iron, use about four times the quantity of the Salts. Workmen will soon understand the strength required for different kinds of work. Unsurpassed for cleaning Zinc.

TINMAN PRESERVE YOUR HEALTH.

Put up in 1-2, 1, 5 and 10 Pound Bottles.
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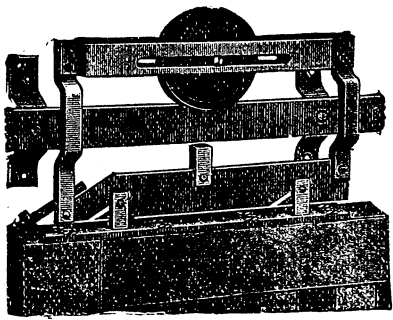
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This Hanger is made of Steel.
The Wheel is also Steel, except the filling or tread.
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The Hanger is Anti-Friction.
More nearly Noiseless than any other.
Ease of adjustment.

Can be erected with half the labor others require.
Track will not swell, shrink or warp out of true.
No cutting of doors.
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Simplicity in all its parts.
Durability.

ALSO LANE BARN DOOR HANGER AND TRACK. SEND FOR CIRCULARS.

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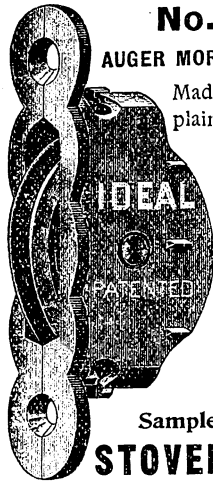
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Ideal Sash Pulley

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AUGER MORTISE—FACE PLATE.



Made with two inch wheel, plain and polished, cone axle bearings, noiseless and easy running; markers on the side to lay off the centers to bore the holes by.

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Sample Free.

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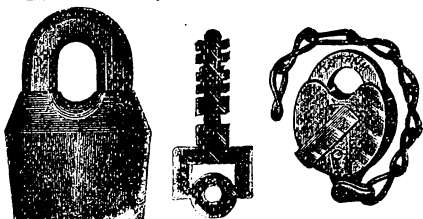
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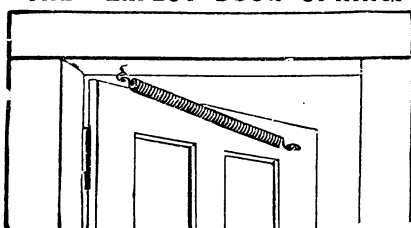
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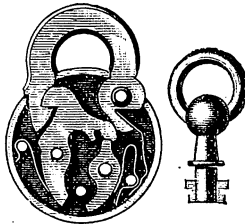


Cheap, Simple, Durable, Effective.

Best Screen Door Spring made. Send for our list of references, comprising some of the first houses in the land. They sell readily, and that is what you are looking for. Drop us a postal.

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Defies Competition for Quality and Price.



PATENT PERFECTION PADLOCK.

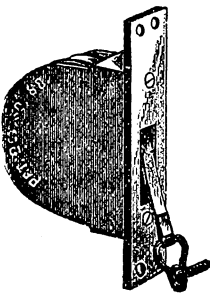
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Sizes, $\frac{1}{4}$ inch to $\frac{3}{4}$ inches, of cast bronze. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{4}$ and $\frac{3}{8}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

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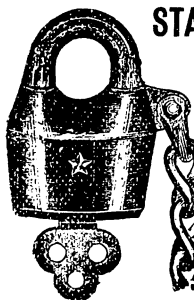
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To buy an inferior article, which your trade condemns, when you can get

THE CALDWELL SASH BALANCE.

The best material, right principle and care in making and testing have made it the **LEADER** for five years. Write to

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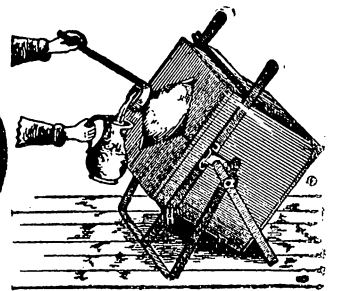
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AND

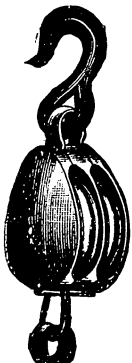
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TACKLE BLOCKS

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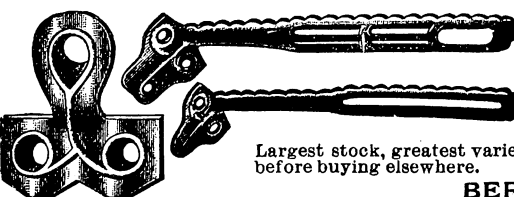
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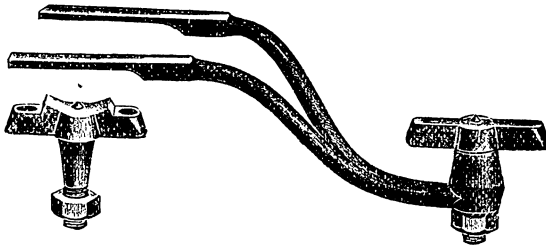
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Largest stock, greatest variety. Prices lower than ever. Write us before buying elsewhere.

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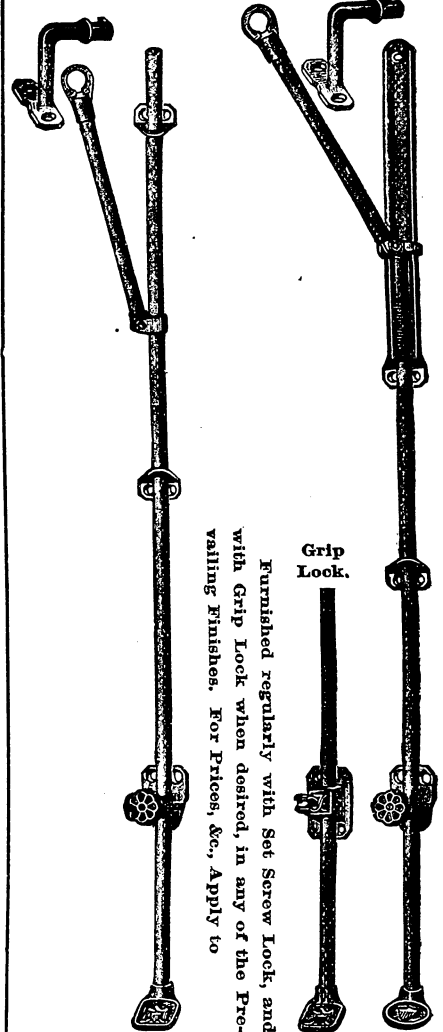
Showing a full line of Axle Clips, Spring Bar Clips, Three Piece Saddle Clips and King Bolt Yokes and Braces.

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Furnished regularly with Set Screw Lock, and with Grip Lock when desired, in any of the Prevailing Finishes. For Prices, &c., Apply to

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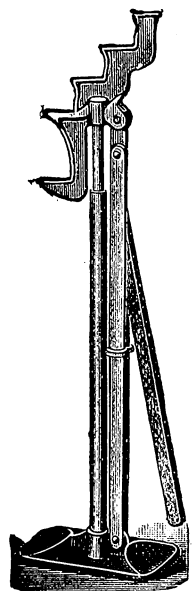
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Easily applied—The only ones made with a Patent Spindle which is Self-Adjusting for all Doors—Other kinds have to be cut and filed to fit.

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Factories, Reading, Pa.



THE TROY WAGON JACK.

This Jack is superior to all others in the market. It is made in two sizes, No. 555 being intended for use on light wagons, and No. 556 for heavy wagons, although it can be used on any vehicle from the lowest Phaeton to the heaviest truck or brewery wagon. Its lifting capacity is greater than any other Jack manufactured, and being made of iron it is indestructible. No. 555 weighs 7 pounds. No. 556 weighs 10 pounds. It is easily handled and operated, and is the cheapest first-class Wagon Jack offered to the trade.

The flat solid base is a great improvement over Jacks having a ring or rim base, as it cannot settle in the ground when in use, or tip when lifting a heavy load.

Sold by all Leading Jobbers in General and Saddlery Hardware at Manufacturers' Prices.

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HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

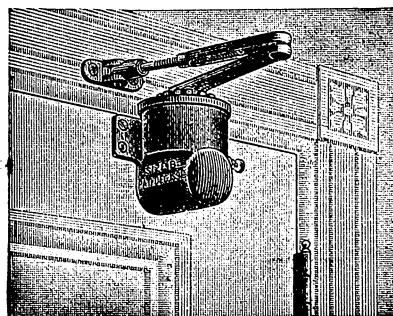
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65 Elizabeth Street,

Write for Prices.

NEW YORK, J. BARDSLEY, 149 & 151 Baxter St., New York



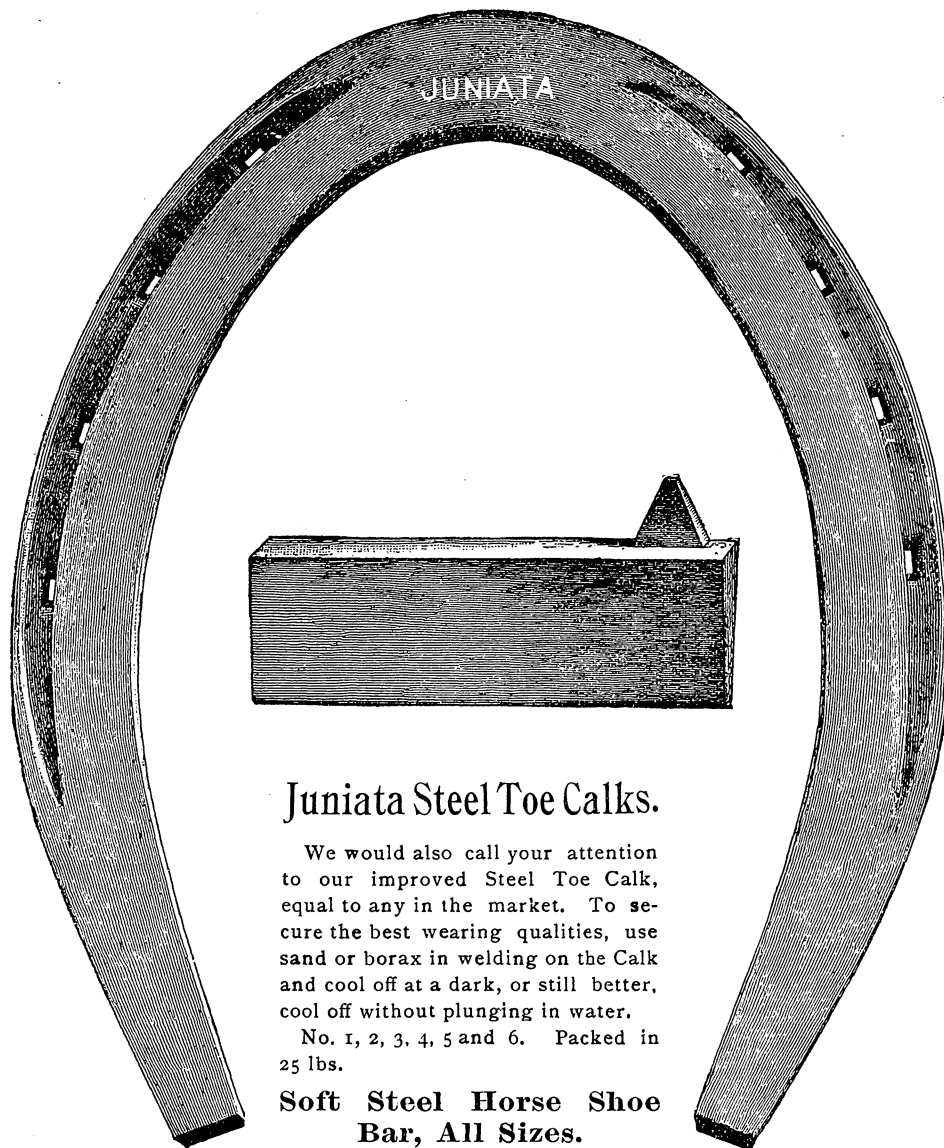
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Perfect in action, durable, neat in appearance, low in price and fully warranted. Responsible Agents wanted in the principal cities.

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SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



Juniata Steel Toe Calks.

We would also call your attention to our improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities, use sand or borax in welding on the Calk and cool off at a dark, or still better, cool off without plunging in water.

No. 1, 2, 3, 4, 5 and 6. Packed in 25 lbs.

Soft Steel Horse Shoe Bar, All Sizes.

No. 2 EXTRA SWAGED HIND.

The advantages of these shoes are that, being made of vastly superior material, they will never show signs of red-shortness or cold shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows :

No. 1, 15 more shoes to the keg.

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" 2, 14 "

" " " "

" 4, 8 "

" " " "

And other sizes in proportion.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

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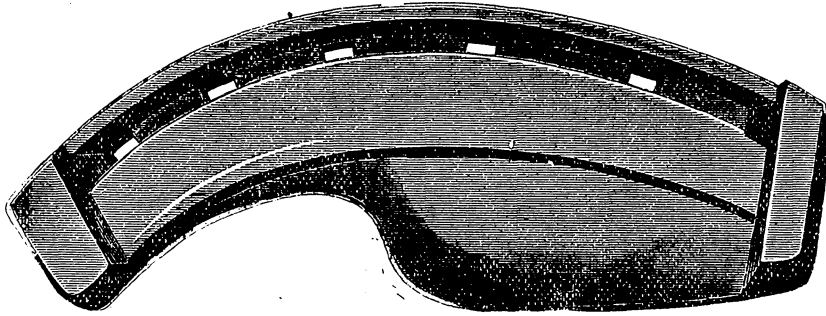
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SCRANTON FORGING CO.,

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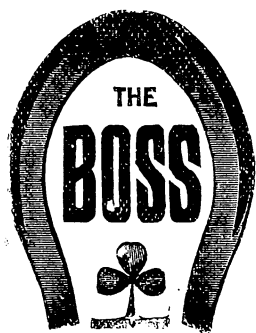
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Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.



HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

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MANUFACTURERS OF

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SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

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Beautiful Shape.

HORSE SHOES,

Light, Medium and Heavy.

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Iron

Boiler Rivets.

The Burden Iron Co.

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PHOENIX HORSE SHOE CO.

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Manufacturers of

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Made from best quality of Scrap Iron and old Horse Shoes.

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Capewell Horse Nails.

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GOLD MEDAL

Office, Manufacturers' Building, Midwinter Fair.

SAN FRANCISCO, CAL., July 1st, 1894.

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At Centennial Exposition
AT PHILADELPHIA.

HIGHEST AWARD

At World's Columbian Exposition
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HOT-FORGED AND HAMMER-POINTED

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At the California Midwinter International
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REGULAR HEADS for ordinary creased shoes.

CITY HEADS, or short heads for shallow creased shoes.

COUNTER HEADS for "Goodenough" shoes.

FRENCH HEADS for punched shoes, without creases.

These Nails are drawn from head to point from the BEST SWEDISH IRON RODS at a welding heat, thus:  by percussive hammer blows only; then polished by the water process, without the aid of acids, and hammer-pointed without any rolling or shearing.

They are the best because they are made of the best iron, and by the only process in which the iron is treated naturally, and its strength preserved.

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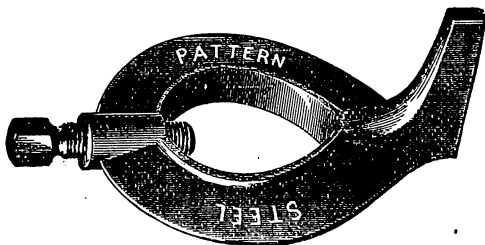
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WITH STEEL SCREWS.

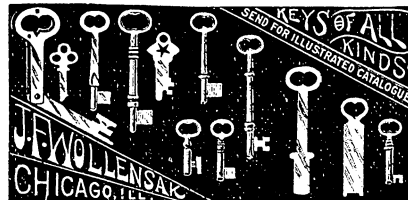
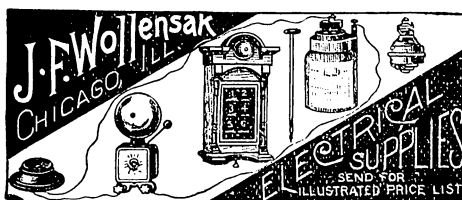
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No.	Inch.	Price.	No.	Inch.	Price.
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3.....	3/4	50	9.....	2 1/2	1 40
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Small set of 8, \$5.50. Full set of 12, \$12

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Of every description. Also Special Forgings.

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Send for Circulars.
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BAR IRON.

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Cut One-half Size.
Sample pair sent to any hardware or saddlery firm by addressing
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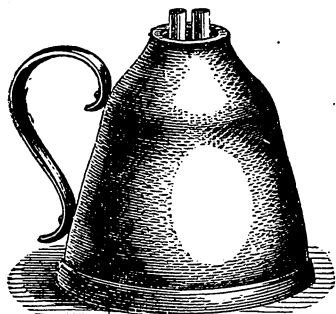
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Made to Order.
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NEW pattern Heavy Screw Clamps, strongest in the Market.

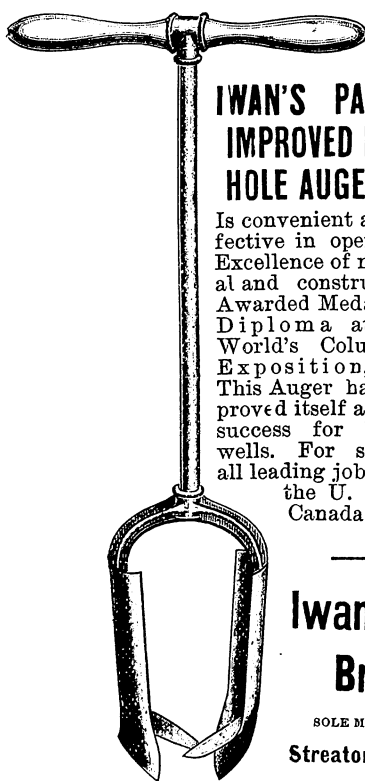
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Send for Price List.

MALLEABLE IRON CASTINGS

Of superior quality, and Hardware Specialties in Malleable Iron made to order.

HAMMER & CO.,
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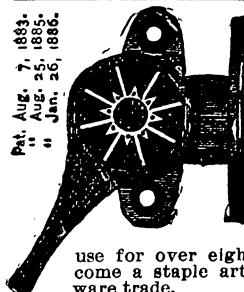
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The Champion SIDE SASH LOCK

Has by its unequalled merits gained the public favor. It is a safe ventilator and prevents rattling. Is neat, cheap, simple and durable. It has been in extensive

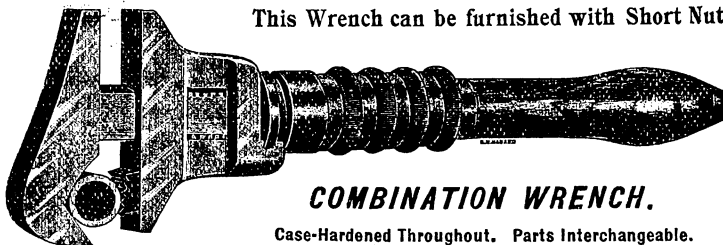
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THE

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This Wrench can be furnished with Short Nut.

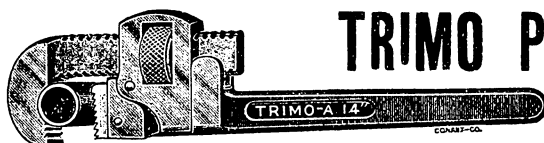


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Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal. For Circulars and Price-List, address

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All Parts Interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

The chain holds securely; cannot fall out even if used upside down. Readily releases when desired. Solid forged head. Fine quality of tool steel. Interchangeable gripping jaws.



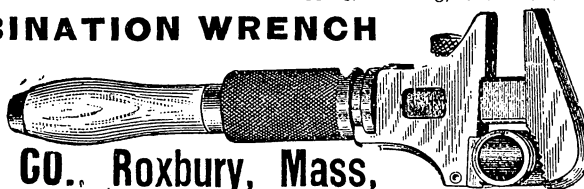
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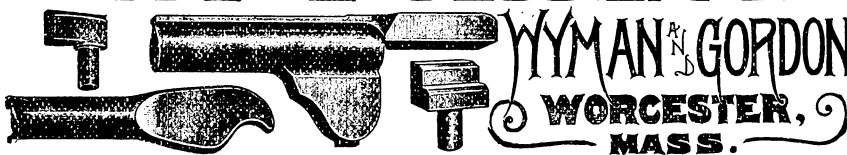
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Jaw Drop Forged
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Few Parts

Best Workmanship
Angle of Jaws the
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Length 14 inches Takes Pipe from 1/4 to 1 1/2 inches

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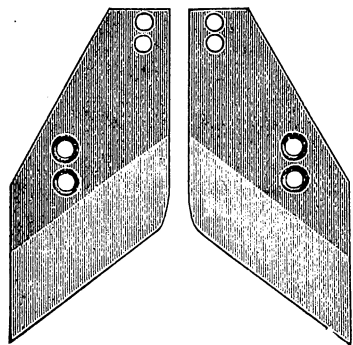
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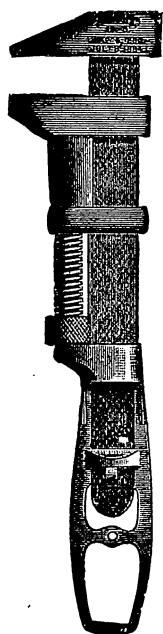
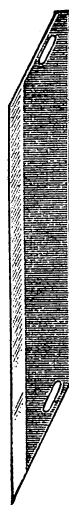
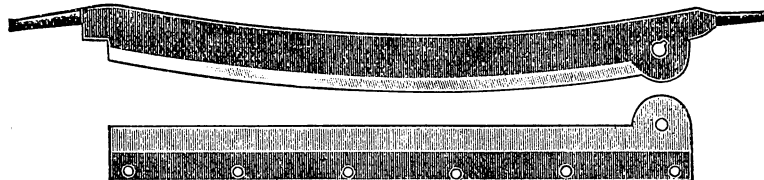
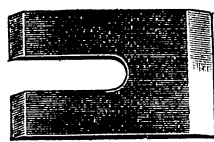


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Manufacturers of MACHINE KNIVES.

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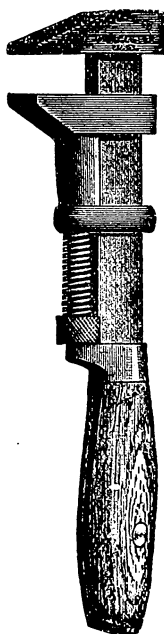
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KNIFE HANDLE
PATENT

Screw Wrenches

MANUFACTURED BY
COES WRENCH CO.,
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3" Straight Bar, Extra Long Nut for Screw in Jaw.

The BEST MADE and STRONGEST WRENCH in the MARKET.

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This popular garden tool is not only attractive in appearance but is practically indestructible, and is free from all of the defects found in the two-piece or wood-handle trowel. It is a great favorite and one of the best selling articles now on the market. Please favor us with a trial order. Price per dozen \$1.20.

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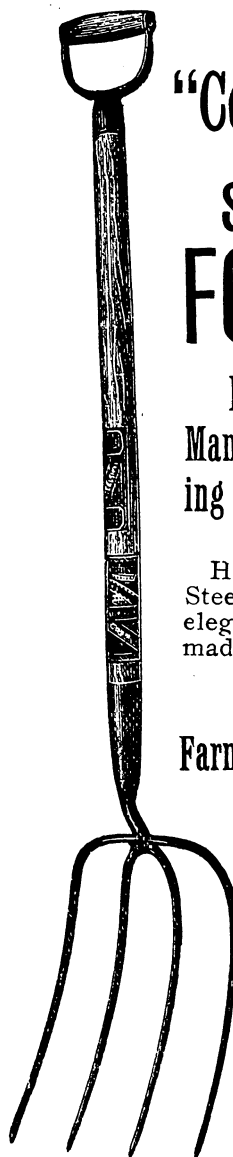
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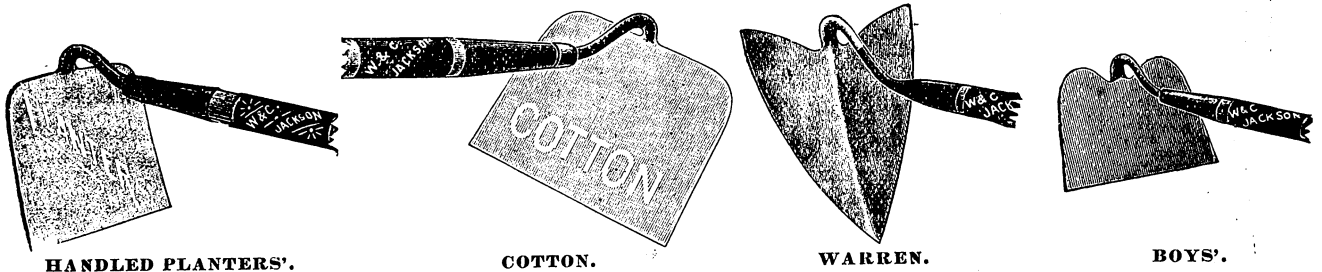
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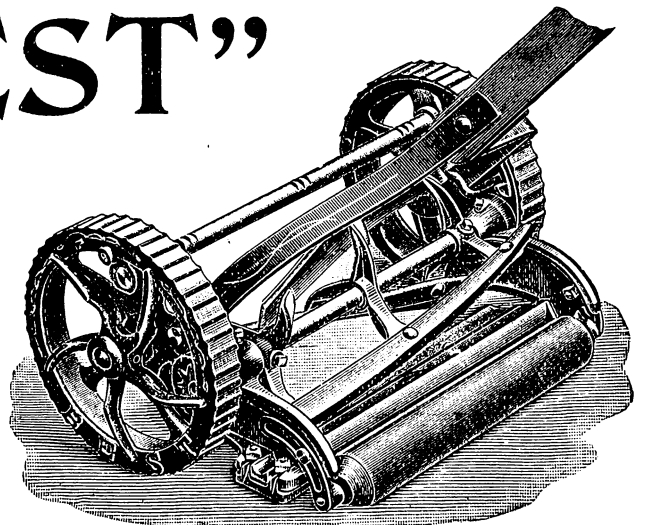
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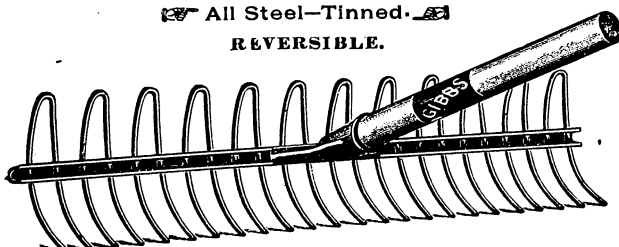
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✓ All Steel—Tinned. ✓
REVERSIBLE.



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IT'S A SELLER.

Made in two sizes and can be had from all Leading Jobbers.

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SCRAPERS AND WHEEL- BARROWS.

All styles and sizes at bottom prices. For the dealer, the contractor and user. If looking for the best, we are headquarters.

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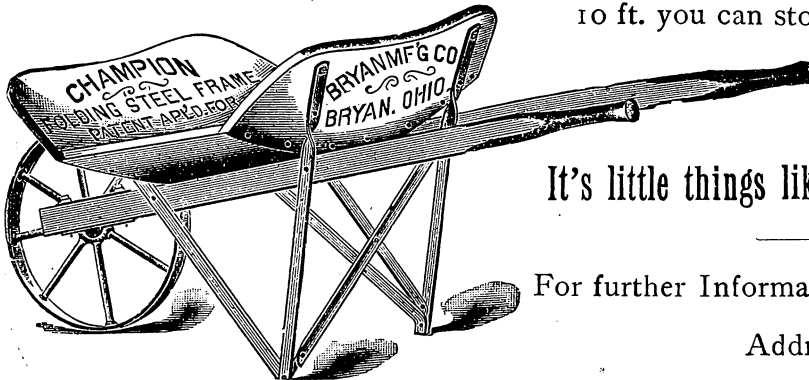
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Did you ever
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out how much

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10 ft. you can store 1920 of ours, while you cannot possibly store more than

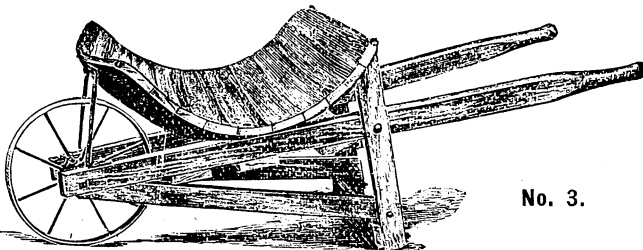
200 of the ordinary style.



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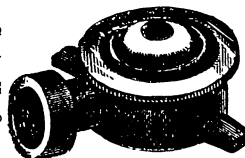


Japanese No. 12.
Adjust.

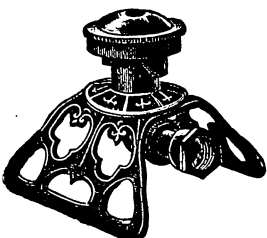
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The only Sprinklers which have no revolving parts to leak or wear out.
The only Sprinklers free from small holes, and which cannot become clogged with gritty substances.
The only Sprinklers which are adjustable and will give a spray as fine as the mist of Niagara, or as heavy as the area of the supply pipe.
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We also manufacture the old style revolving sprinklers, but for our own use would not have them

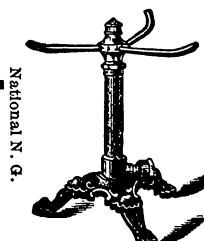


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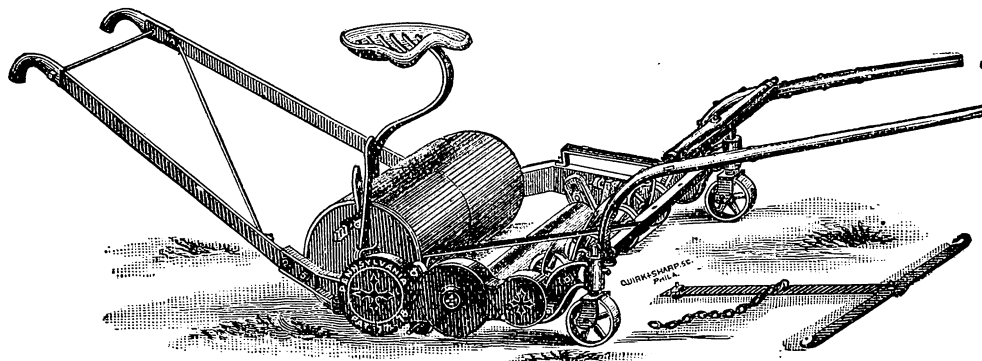
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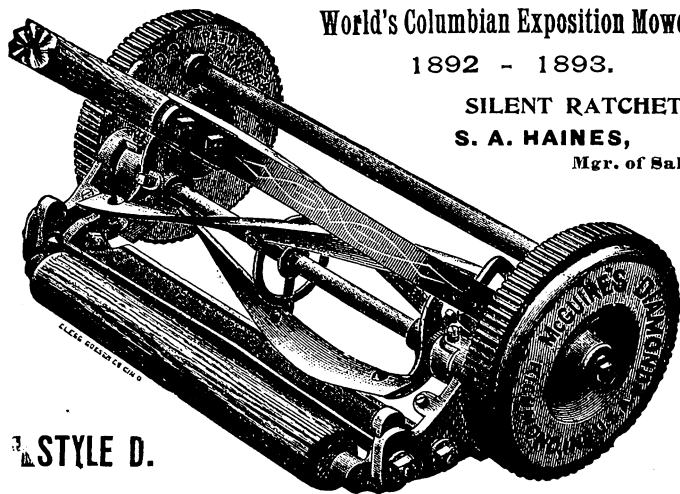
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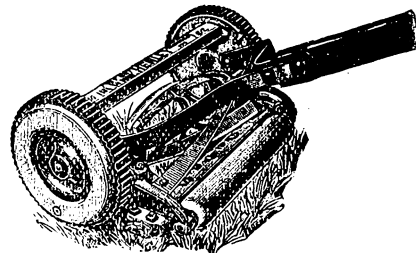
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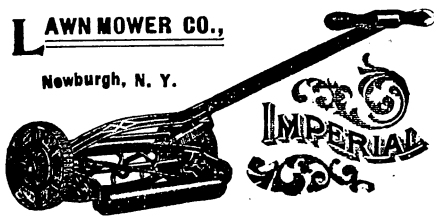


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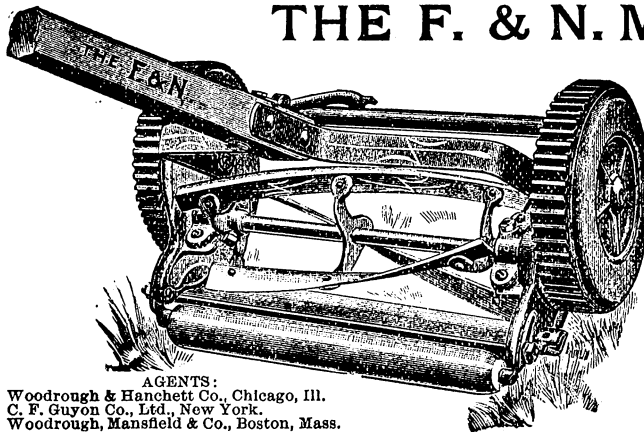


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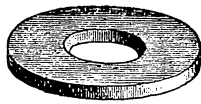
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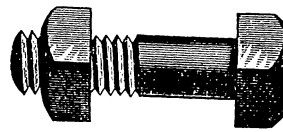
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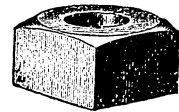
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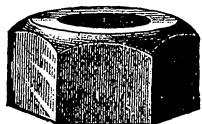
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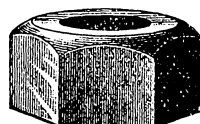
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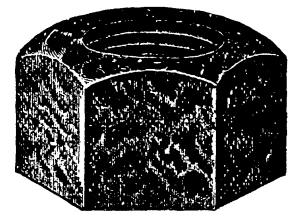


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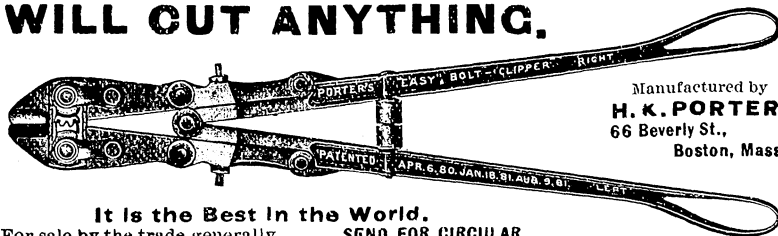
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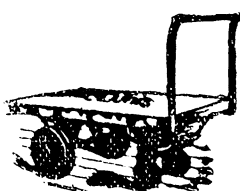
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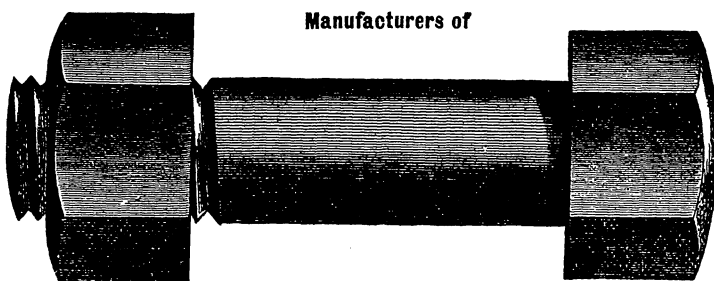
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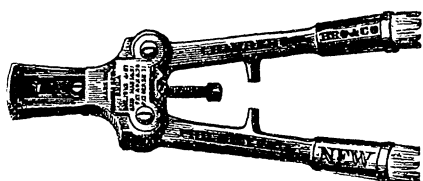
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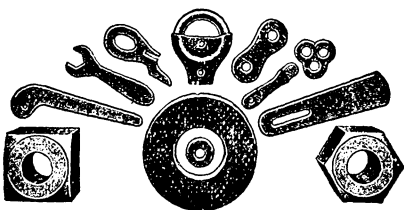
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Samson Cordage Works, Boston, Mass.

Cork Screws.

Williamson, C. T. Wire Novelty Co., Newark, N. J.

Corrugated Furnaces.

Continental Iron Wks., Brooklyn, N. Y.

Corrugated Iron.

Cincinnati Corrugating Co., Piqua, O.
Jersey City Galvanizing Co., 112 John St., N. Y.
Moseley Iron Bridge & Roof Co., 5 Day, N. Y.
N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.

Counting Machines.

Durant, W. N., Milwaukee, Wis.

Cranes.

Maris & Beekley, Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Whiting Foundry Equipment Co., Chicago, Ill.
Yale & Towne Mfg. Co., Stamford, Conn.

Cupolas, Hot Blast.

Whiting Foundry Equipment Co., Chicago, Ill.

Cutlery, Importers of.

Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Cutlery, Manufacturers of.

Bingham, W. Co., Cleveland, Ohio.
Dame, Stoddard & Kendall, Boston, Mass.
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.
Wilson, John, Sheffield, England.

Cutlery Display Cases.

Union Show Case Co., Chicago, Ill.

Dampers.

Aracade Mfg. Co., Freeport, Ill.

Dies.

Wilson, J. Fred, Worcester, Mass.

Die Forgings and Castings.

Bliss, E. W. Co., Brooklyn, N. Y.

Dish Washers.

Boigiano Mfg. Co., Baltimore, Md.

Dog Collars.

Union Hardware Co., Torrington, Ct.

Door Checks and Springs.

Bardsley, J., 149 & 151 Baxter St., N. Y.

Door Knobs.

Perry & Whipple Co., New Haven, Ct.

Door Latches.

Thomas, W. H., Jenkintown, Pa.

Door Springs.

Coiled Wire Belting Co., Jersey City, N. J.

Drilling Machines.

Beaman & Smith, Providence, R. I.
Bickford Drill & Tool Co., Cin., Ohio.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale 204 E. 43d St., N. Y.
Dietz, Schumacher & Co., Cincinnati, Ohio.

Dwight Slate Machine Co., Hartford, Conn.

Goddard, Asa, Worcester, Mass.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Herrick & Cowell, New Haven, Conn.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.

Drop Forgings.

Billings & Spencer Co., Hartford, Conn.
Boone, W. C. Mfg. Co., Boonton, N. J.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Merrill Bros., Brooklyn, E. D.
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Wilcox & Howe Co., Birmingham, Conn.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.

Bliss, E. W. Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Miner & Peck Mfg. Co., New Haven, Conn.

Stiles & Parker Press Co., Brooklyn, N. Y.

Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.

Hutchinson, F. S. Co., 32 Warren Street, N. Y.
Storm Mfg. Co., Newark, N. J.

Dynamite.

New York Powder Co., 62 Liberty St., N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia, Pa.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York.
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Hanson & Van Winkle Co., Newark, N.J.

Electric Lights.
Electric Construction & Supply Co., 18 Cortlandt St., N. Y.

Elevators.
Link-Belt Engineering Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Penna. Elevator Engineering Co., Phila., Pa.
Warner Elevator Mfg. Co., Cincinnati, Ohio.

Emery and Emery Wheels.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Sterling Emery Wheel Co., 174 Fulton St., N. Y.
Tantite Co., Stroudsburg, Pa.

Emery Wheel Dressers.
Bay State Stamping Co., Worcester, Mass.

Engineers and Contractors.
Alken, Henry, Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Smythe, S. R. Co., Incorporated, Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas and Gasoline.
Buckeye Mfg. Co., Union City, Ind.
Otto Gas Engine Works, Phila., Pa.
Springfield Gas Engine Co., Springfield, Ohio.

Engines, Steam, Makers of.
Allis, E. P. Co., Milwaukee, Wis.
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Chandler & Taylor Co., Indianapolis, Ind.
Harris, Wm. A., Steam Engine Co., Providence, R. I.
Lane & Bodley Co., Cincinnati, Ohio.
Norwalk Iron Works Co., So. Norwalk, Conn.
Phila. Engineering Works, Phila., Pa.
Southwark Foundry & Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Westwick, Jno. & Son, Galena, Ill.
Wetherill, Robt. & Co., Chester, Pa.

Excelsior.
Independent Electric Co., Chicago, Ill.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O.
Steward & Romaine Mfg. Co., Phila., Pa.

Exporters.
Flint & Co., 68 Broad St., N. Y.

Faucets, Self-Measuring.
Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden, Makers of.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters and Purifiers.
Davis, I. B. & Son, Hartford, Conn.
Harrison Safety Boiler Works, Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Chess Bros., Pittsburgh, Pa.
Clinton Wire Cloth Co., Clinton, Mass.
Silbert & Bennett Mfg. Co., 42 Cliff St., Elmer, N. Y.
McCallip Fence & Wire Wks., Columbus, Ohio.
The Van Dorn Iron Works Co., Cleveland, O.

Files, Importers of.
Moss, F. W., 80 John St., N. Y.

Files and Rasps, Manufacturers of.
Arcade File Works, Anderson, Ind.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond, Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.

Fire Brick, Makers of.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer, B. & Sons, Foot E. Houston St., N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro. Co., Woodbridge.

Fire Doors.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Fishing Tackle.
Danie, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.
Meyers, Fred, J. Mfg. Co., Hamilton, O.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Forges, Portable, &c.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
U. S. Projectile Co., Brooklyn, N. Y.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Iowa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Facings.
Dixon, Jos., Crucible Co., Jersey City, N. J.
S. Obermayer Co., Cincinnati, O.
Smith's Pattern Works, Akron, Ohio.

Foundry Riddles.
Estey, W. S., 65 Fulton, N. Y.

Foundry Supplies.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Rice Mfg. Co., New Durham, N. H.
Smith, J. D., Fdy. Supply Co., Cinn., O.
Smith's Pattern Works, Akron, Ohio.

Friction Clutches.
Brown, A. & F., 17 Dey St., N. Y.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Gages.
Leavitt Mch. Co., Orange, Mass.

Galvanized Material.
Jersey City Galvanizing Co., 112 John St., N. Y.

Galvanizing Kettles.
Sands, Thos., Nashua, N. H.

Galvanizing and Tinning.
Wilcox, Crittenden & Co., Middletown, Conn.

Gas Producers.
Wood, R. D. & Co., Philadelphia, Pa.

Gas Stoves.
Bogliano Mfg. Co., Baltimore, Md.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gate Hinges.
Wrightsville Hdw. Co., Wrightsville, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Lincoln Iron Works, Rutland, Vt.
Poole, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.

Glass Boards.
Lufkin Rule Co., Saginaw, Mich.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glaziers' Points.
Shelton Co., Birmingham, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Dodd, A. W. & Co., Gloucester, Mass.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplies Hardware Co., Phila., Pa.

Grate Guards.
Dow Wire Works Co., Louisville, Ky.

Grinding and Polishing Machines.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.

Grindstone Dressing Machinery.
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stove Co., Cleveland, O.

Gun Implements.
Bridgeport Gun Implement Co., 313-35 Broadway, N. Y.
Union Hdw. Co., Torrington, Conn.

Gunpowder, Makers of.
Lafin & Rand Powder Co., 29 Murray St., N. Y.

Gymnasium Supplies.
Independent Electric Co., Chicago, Ill.

Hack Saw Frames.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Handles.
Cleveland Wood Turning Co., Cleveland, O.

Hangers, Door.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.

Hardware Comm'n Merchants.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Drawers.
Wernicke Co., Minneapolis, Minn.

Hardware Jobbers.
White, Van Glahn & Co., 15-17 Chatham Square, N. Y.

Hardware Manufacturers.
Allentown Hardware Works, Allentown, Pa.
Miller Falls Co., 93 Reade St., N. Y.
Stearns, E. C. & Co., Syracuse, N. Y.
Streeter, N. R. & Co., Groton, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Clarke, Thomas St. John, N. B.
Graham, John H. & Co., 113 Chambers, Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Barger Bros., Philadelphia, Pa.
Clark Mfg. Co., Buffalo, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwiner Mfg. Co., Hamilton, O.
Johnson, S. C., Racine, Wis.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa.
Ranson Hdw. Co., Burlington, Vt.
Scranton & Co., New Haven, Conn.
Shepard, Sidney & Co., Buffalo, N. Y.
Union Lock & Hdw. Co., Lancaster, Pa.
Wilson, J. Fred, Worcester, Mass.
Wrightsville Hdw. Co., Wrightsville, Pa.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Tools.
Myers, F. E. & Bro., Ashland, O.

Hoes.
Iowa Farming Tool Co., Ft. Madison, Iowa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.
Byers, Jno. F. Mch. Co., Ravenna, O.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E. Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Lincoln Iron Works, Rutland, Vt.
McCoy, Jos. F. & Co., 26 Warren St., New York.
Maris & Beckley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Spindel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Avery Stamping Co., Cleveland, O.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.
Wohler Aluminum Co., Chicago, Ill.

Horse Clippers.
Gillette Clipping Machine Co., 201 E. 23d St., N. Y.

Horse Nails, Makers of.
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes, Makers of.
Bryden Horse Shoe Co., Catsaqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Leonard, J., 446 West St., N. Y.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Forging.
U. S. Projectile Co., Brooklyn, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
McCoy, Jos. F. Co., 26 Warren St., N. Y.

Ice Cream Freezers.
White Mountain Freezer Co., Nashua, N. H.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenish Bros., New York.
Sherwood Mfg. Co., Buffalo, N. Y.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.

Iron Commission Brokers.
Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Barclay W. & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Lewin, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Samuel, Frank, Philadelphia, Pa.

Iron, Merchants.
Barns, C. K. & Co., Philadelphia, Pa.
Barnes & Lovell, 70 West, N. Y.
Bussenus & Cunliffe, Philadelphia.
Corning, Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Nicolls, W. & Co., Philadelphia.
Orlans & Wallace, 677 to 683 Greenwich St., N. Y.

Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet, Manufacturers of.
Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Ltd., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
The Van Dorn Iron Works Co., Cleveland, O.

Jack Screws.
Miller Falls Co., 93 Reade St., N. Y.

Japanning.
Smith, Theo. V., 54 John St., N. Y.

Keys.
Wollensak, J. F., Chicago, Ill.

Knife and Tool Grinders.
Tracy, A. J. Co., Ltd., 18 Cliff St., N. Y.

Ladles.
Whiting Fdy. Equipment Co., Chicago, Ill.

Lanterns.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lasts.
Kupferle, Jno. C., St. Louis, Mo.

Lathes.
Beaman & Smith, Providence, R. I.
Dietz, Schumacher & Co., Cincinnati, O.
Draper Machine Tool Co., Worcester, Mass.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
New Haven Mfg. Co., New Haven, Conn.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Lathing, Expanded Metal.
Chess Bros., Pittsburgh, Pa.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Anderson, F. S. & Co., Richmond, Ind.
Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Supplee Hdw. Co., Phila., Pa.

Lawn Rakes.
Gibbs Mfg. Co., Canton, Ohio.
Kohler, F. E. & Co., Canton, O.

Lawn Sprinklers.
Blair Mfg. Co., Springfield, Mass.
Ette & Henger Mfg. Co., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.

Letters and Figures, Metallic.
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Richardson, C. F. & Son, Athol, Mass.

Locks and Knobs, Manufacturers of.
Dette, A. E., 97 Chambers, N. Y.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Warner Lock Co., Chicago, Ill.
Yale & Towne Mfg. Co., Stamford, Conn.

Lubricants.
Dixon, Jos., Crucible Co., Jersey City, N. J.

Machinery.
Am. Tool Works, Cleveland, Ohio.
Ayer, H. C. & Gleason Co., Phila., Pa.
Barnes, W. F. & John, Rockford, Ill.
Beaman & Smith, Providence, R. I.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 46 Dey, N. Y.
Bisnal & Keeler Mfg. Co., St. Louis.
Bliss, E. W. Co., Brooklyn, N. Y.
Briggs, Marvin, 131 Broadway, N. Y.
Bullard Mch. Tool Co., Bridgeport, Conn.
Carlin's Sons, Thos., Allegheny, Pa.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Dietz, Schumacher & Co., Cincinnati, Ohio.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhard, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila., Pa.
Hartford Machine Screw Co., Hartford, Conn.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 46 Fulton St., N. Y.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Davis Mch. Tool Co., Cincinnati, O.
Lodge & Shipley Mch. Tool Co., Cincinnati, O.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists' Supply Co., Rochester, N. Y.
Manville, E. J., Mch. Co., Waterbury, Conn.
Newark Mch. Tool Wks., Newark, N. J.
New Haven Mfg. Co., New Haven, Ct.
New York Machinery Depot, 173 Broadway, New York.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

- Place, Geo., 145 Broadway, N. Y.
 Poole, Robt. & Son Co., Baltimore, Md.
 Powell Planer Co., Worcester, Mass.
 Prentiss Tool & Supply Co., N. Y.
 Scranton Supply & Mchry. Co., Scranton, Pa.
 Sellers, Wm. & Co., Phila.
 Seyfert's Sons, L. F., Philadelphia, Pa.
 Sigourney Tool Co., Hartford, Conn.
 Steptoe, J. & Co., Cincinnati, O.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomey, Frank, Philadelphia, Pa.
 Walker Mfg. Co., Cleveland, O.
 Wetherill, Robert & Co., Chester, Pa.
 Wilson, W. A., Rochester, N. Y.
- Machinery for Hardware Manufacturers.**
 Adt, Jno. & Son, New Haven, Conn.
- Machine Knives.**
 Loring, Coes & Co., Worcester, Mass.
 Simonds Mfg. Co., Fitchburg, Mass.
- Machine Screws.**
 Hubbell, Harvey, Bridgeport, Ct.
 New Britain Hdw. Mfg. Co., New Britain, Conn.
 Rhode Island Tool Co., Providence, R.I.
- Machine Tools.—See Machinery.**
- Machine Work.**
 Papping, J., 58th St. & 11th Ave., N. Y. City.
- Machinists' Scales.**
 Coffin & Leighton, Syracuse, N. Y.
 Starrett, L. S., Athol, Mass.
- Machinists' Tools and Supplies.**
 King, J. M. & Co., Waterford, N. Y.
 Sellers, Wm. & Co., Inc., Phila.
- Manufacturing Sites.**
 Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.
- Measuring Tapes.**
 Lufkin Rule Co., Saginaw, Mich.
- Meat Choppers.**
 Enterprise Mfg. Co., Philadelphia, Pa.
- Meat Cutters.**
 North Bros. Mfg. Co., Philadelphia, Pa.
- Mechanical Instruction.**
 Correspondence School of Mechanics, Scranton, Pa.
- Metals.**
 Fearing, Wm. S., 100 Chambers, N. Y.
 Hendricks Bros., 49 Cliff, N. Y.
- Metal Brokers.**
 American Metal Co., N. Y.
- Metal Saws.**
 Q. & C. Co., Chicago, Ill.
- Metalurgists.**
 Britton, J. Blodgett, Phila., Pa.
- Mining Knives.**
 Palmer Hdw. Mfg. Co., Troy, N. Y.
 Streeter, N. R. & Co., Groton, N. Y.
- Mine Lamps.**
 Darby, Edw. & Sons, Phila., Pa.
 Leonard, B. E., Scranton, Pa.
- Mining Screens.**
 Harrington & King Perforating Co., Chicago, Ill.
 Howard & Morse, 45 Fulton, N. Y.
- Mining Machinery.**
 Allis, E. P. Co., Milwaukee, Wis.
- Models, Makers of.**
 Ideal Machine Works, Hartford, Conn.
- Molding Sand.**
 Obermayer, S. Co., Cincinnati, O.
- Motors, Water and Electric.**
 Bolgiano Mfg. Co., Baltimore, Md.
 C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
 Dallett, Thomas H. & Co., Phila., Pa.
- Nail Keg Stock.**
 Crescent Mfg. Co., Detroit Mich.
- Nail Machinery.**
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail and Tack Pullers.**
 Am. Specialty Co., Hartford, Conn.
 Soranton & Co., New Haven, Conn.
- Nails (Cut) and Spikes.**
 Borden & Lovell, 70 West, N. Y.
 Pottstown Iron Co., Pottstown, Pa.
 Riverside Iron Wks., Wheeling, W. Va.
- Nickel Platers' Supplies.**
 Hanson & VanWinkle Co., Newark, N.J.
 Zucker & Levett & Loeb Co., 10 to 14 Grand St., N. Y.
- Norway Shapes, Rollers of.**
 Rowland, William & Harvey, Frankford, Philadelphia.
- Novelty Manufacturers.**
 Ideal Machine Works, Hartford, Conn.
- Nut Machines.**
 Dunham Nut Co., Unionville, Ct.
- Nuts, Bolts, &c., Makers of.**
 American Bolt Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Dunham Nut Co., Unionville, Conn.
 Haskell, Wm. H. Co., Pawtucket, R. I.
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.
 Pennsylvania Bolt & Nut Co., Lebanon, Pa.
 Port Chester Bolt & Nut Co., Port Chester, N. Y.
 Rhode Island Tool Co., Providence, R.I.
 Russell, Burdall & Ward, Port Chester, N. Y.
 Sternbergh, J. H. & Son, Reading, Pa.
 Wilson, J. Fred, Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, R. I.
- Oil Cans and Lubricators.**
 Sherwood Mfg. Co., Buffalo, N. Y.
- Oilers.**
 Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.
- Oil Heaters.**
 Rochester Lamp Co., 42 Park Place, New York.
 Standard Ligating Co., Cleveland, O.
- Oilless Anti-Friction Metals.**
 North American Metalline Co., Long Island City, N. Y.
- Oil Stones.**
 Pike Mfg. Co., Pike Station, N. H.
- Ores.**
 Wister, Francis, Philadelphia, Pa.
- Ox Shoes.**
 Scranton Forging Co., Scranton, Pa.
- Packing.**
 Morrison, Robert, St. Louis, Mo.
 N. Y. Belting & Packing Co., Ltd., N. Y.
- Padlocks.**
 Ames Sword Co., Chicopee, Mass.
 Fraim, E. T., Lancaster, Pa.
 Union Lock & Hdw. Co., Lancaster, Pa.
 Wolf, W. & L., Phila., Pa.
- Pails.**
 Richmond Cedar Wks., Richmond, Va.
- Paint Burners.**
 Dangler Stove & Mfg. Co., Cleveland, Ohio.
- Paint Cans.**
 Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.
- Pants Stretcher.**
 Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors.**
 Butler, C. N., Phila., Pa.
 Jenner, H. W. T., Washington, D. C.
 Howson & Howson, Philadelphia and Washington.
 Stocking, E. B., Washington, D. C.
- Pattern Letters.**
 Wells, Heber, 157 William St., N. Y.
- Perforated Metal.**
 Clinton Wire Cloth Co., Clinton, Mass.
 Harrington & King Perforating Co., Chicago, Ill.
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Phosphor Bronze.**
 Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin.**
 Crescent Phosphorized Metal Co., Philadelphia, Pa.
 Halk & Naumann, 516 Pearl, N. Y.
- Picks and Mattocks.**
 Plumb, Fayette R., Philadelphia, Pa.
- Pig Iron.**
 Houston, C. B. & Co., Philadelphia, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Naylor & Co., 45 Wall, N. Y.
 Pilling & Crane, Philadelphia, Pa.
 Samuel, Frank, Philadelphia, Pa.
- Pig Iron Storage.**
 Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
- Pile Drivers.**
 Vulcan Iron Works, Chicago, Ill.
- Pipe, Bent.**
 National Pipe Bending Co., New Haven, Conn.
- Pipe Cutting and Threading Machines.**
 Armstrong Mfg. Co., Bridgeport, Conn.
 Bignall & Keeler Mfg. Co., St. Louis, Mo.
 Detrick & Harvey Mch. Co., Baltimore, Md.
 Merrill Mfg. Co., Toledo, O.
 Fancoast, Henry B. & Co., Phila.
 Saunders' Sons, D. Yonkers, N. Y.
 Walworth Mfg. Co., Boston, Mass.
- Pipe Grips.**
 Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c., Makers of.**
 McNab & Harlin Mfg. Co., N. Y.
- Pipe, Water and Gas, Makers of.**
 Donaldson Iron Co., Emmaus, Pa.
 Riverside Iron Works, Wheeling, W. Va.
 Wood, R. D. & Co., Philadelphia, Pa.
- Plane Irons, Manufacturers of.**
 Buck Bros., Millbury, Mass.
 Buck, Chas., Millbury, Mass.
- Planers.**
 Detrick & Harvey Mch. Co., Baltimore, Md.
 New Haven Mfg. Co., New Haven, Conn.
 Powell Planer Co., Worcester, Mass.
 Wilson, W. A., Worcester, Mass.
- Planes, Manufacturers of.**
 Stanley Rule & Level Co., N. Y.
- Plated Ware.**
 Boardman, L. & Son, New Haddam, Ct.
 Holmes & Edwards Silver Co., Bridgeport, Conn.
 Rogers, Wm. Mfg. Co., Hartford, Ct.
- Plate, Iron and Steel, Mfrs. of.**
 Aetna-Standard Iron & Steel Co., Bridgeport, O.
 Lukens Iron & Steel Co., Coatesville, Pa.
 Mahoning Valley Iron Co., Youngstown, Ohio.
 Moorhead-McLean Co., Pittsburgh, Pa.
 McIlvain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimick & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Wood, Alan Co., Philadelphia.
- Plating, Nickel, Brass and Silver.**
 Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.
- Polishing Machines.**
 Watson & Stillman, 204 E. 43d, N. Y.
- Post Hole Diggers.**
 Gibbs Mfg. Co., Canton, Ohio.
 Iwan Bros., Streator, Ill.
 Kohler, F. E. & Co., Canton, O.
- Poultry Nettings.**
 Barnum, E. T., Detroit, Mich.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
 N. J. Wire Cloth Co., Trenton, N. J.
 "Silver Finish."
 Tyler Wire Works Co., W. S., Cleveland, O.
 Wright & Colton Wire Cloth Co., Worcester, Mass.
- Powder.**
 Ladin & Rand Powder Co., 29 Murray, New York Powder Co., 62 Liberty St., N. Y.
- Power Hammers.**
 Denelt & Eisenhardt, Philadelphia.
 Dupont Mfg. Co., St. Johnsbury, Vt.
 Jenkins & Linsie, Bellefonte, Pa.
 Long & Allstatter Co., Hamilton, Ohio.
 Miner & Peck Mfg. Co., New Haven, Conn.
 Scranton & Co., New Haven, Conn.
- Power Transmitting Machinery.**
 Dodge Mfg. Co., Mishawaka, Ind.
- Presses, Dies, &c.**
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Ferracute Mch. Co., Bridgeton, N. J.
 Sells & Parker Press Co., Brooklyn, N. Y.
 Waterbury Mch. Co., Waterbury Ct.
- Presses, Power, Makers of.**
 Bliss, E. W. Co., Brooklyn, N. Y.
 Manille, E. J. Mch. Co., Waterbury, Ct.
 Merriman, A. H., Meriden, Conn.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
- Printing and Embossing.**
 Griffith, Axtell & Cady Co., Holyoke, Mass.
- Pruners.**
 Toplift & Ely Co., Elyria, Ohio.
- Pulleys.**
 Brown, A. & F., 17 Dey St., N. Y.
 Dodge Mfg. Co., Mishawaka, Ind.
 Keystone Clutch Mch. Wks., Phila., Pa.
 Reading Wood Pulley Co., Reading, Pa.
 Reeves Pulley Co., Columbus, Ind.
- Pumping Machinery.**
 Dean Bros. Steam Pump Works, Indianapolis, Ind.
 Goulds Mfg. Co., Seneca Falls, N. Y.
 Hooker-Coville Steam Pump Co., St. Louis, Mo.
 Lucas, C. O. & Co., Greenville, Ohio.
 McGowan, J. H. & Co., Cincinnati, O.
 Maslin, J. & Son, Jersey City, N. J.
 Norwalk Iron Works Co., So. Norwalk, Conn.
 Southwark Fdy. & Mch. Co., Phila., Pa.
 Valley Pump Works, Easthampton, Mass.
 Worthington, Henry R., 86 and 88 Liberty St., N. Y.
- Pumps, Makers of.**
 Denalt Co., Salem, O.
 Douglas, W. & B., Middletown, Conn.
 Goulds Mfg. Co., Seneca Falls, N. Y.
 Millar, C. & Sons, Utica, N. Y.
 Myers, F. E. & Bro., Ashland, O.
 Peters Pump Co., Kewanee, Ill.
 Red Jacket Mfg. Co., Davenport, Iowa.
- Punches.**
 Richards, I. P., Providence, R. I.
- Punches and Shears, Hand and Power.**
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Ferracute Mch. Co., Bridgeton, N. J.
 Long & Allstatter Co., Hamilton, Ohio.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Wan & Roos Punch & Shear Co., Cincinnati, Ohio.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
 Watson & Stillman, 204 E. 43d, N. Y.
- Rails, Old and New.**
 Ferry, W. H. & Co., Providence, R. I.
- Rat and Mouse Traps.**
 Burditt & Williams, Boston, Mass.
 Estey, W. S., 65 Fulton, N. Y.
 Excelsior Cutlery Co., Worcester, Mass.
- Razor, Manufacturers of.**
 Millbury Razor Co., Millbury, Mass.
 Swedish Razor Co., Worcester, Mass.
- Reducing Valves.**
 D'Este & Seeley Co., Boston, Mass.
- Reels.**
 Hendryx, A. B. Co., New Haven, Conn.
- Refrigerator Door Fasteners.**
 Conroy, P. J. & Co., Philadelphia.
- Rivers.**
 Johnson, Waterbury, Conn.
 Burden Iron Co., Troy, N. Y.
 Clark & Cowles, Plainville, Conn.
 Cobb & Drew, Plymouth, Mass.
 Sternbergh, J. R. & Son, Reading, Pa.
 Townsend, W. P. & Co., New Brighton, Pa.
- Riveting Machines.**
 Adt, Jno. & Sons, New Haven, Conn.
- Rolling Mill Machinery.**
 Birmingham Iron F'dry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 Leeburg Foundry & Mch. Co., Pittsburgh, Pa.
 Morgan Construction Co., Worcester, Mass.
 Robinson-Rea Mfg. Co., Pittsburgh.
 Totten & Hogg Iron and Steel F'dry Co., Pittsburgh, Pa.
 Trethewey Mfg. Co., Pittsburgh, Pa.
 Waterbury Farrel Foundry & Mch. Co., Waterbury Conn.
- Rolls, Chilled, Sand and Steel.**
 Birmingham Iron Foundry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 East Chicago F'dry Co., Chicago, Ill.
 Garrison, A. F'dry. Co., Pittsburgh, Pa.
 Robinson-Rea Mfg. Co., Pittsburgh, Pa.
 Seaman, Sleeth & Black, Pittsburgh.
 Totten & Hogg Iron and Steel F'dry Co., Pittsburgh, Pa.
- Roofing.**
 Cincinnati Corrugating Co., Piqua, O.
 N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Rope and Web Goods.**
 Covert Mfg. Co., West Troy, N. Y.
 Covert's Saddlery Wks., Farmer, N. Y.
- Rope Wheels.**
 Cresson, Geo. V. Co., Philadelphia, Pa.
- Rubber Goods.**
 Canfield, H. O., Bridgeport, Conn.
- Rules, Manufacturers of.**
 Stanley Rule & Level Co., 29 Chambers, Stephens & Co., Riverton, Conn.
- Sad Irons.**
 Enterprise Mfg. Co., Phila., Pa.
 Streeter, N. R. & Co., Groton, N. Y.
- Sad Irons, Gas.**
 Bolgiano Mfg. Co., Baltimore, Md.
- Sand Paper.**
 Baeder, Adamson & Co., Phila., Pa.
- Sash Balances.**
 Caldwell Mfg. Co., Rochester, N. Y.
 Fullman Sash Balance Co., Rochester, N. Y.
- Sash Cords and Chains.**
 Morton, Thos., 65 Elizabeth, N. Y.
 Samson Cordage Works, Boston, Mass.
 Smith & Egge Mfg. Co., Bridgeport.
- Sash Locks.**
 Champion Safety Lock Co., Cleveland, Ohio.
- Sash Pulleys.**
 Palmer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights.**
 Brown, E. E. & Co., Philadelphia, Pa.
 Kings County Iron Foundry, Brooklyn, N. Y.
 Norton Bros., Chicago, Ill.
- Saw Filing Machines.**
 Disston, Henry & Sons, Philadelphia, Pa.
- Saws, Makers of.**
 Atkins, E. C. & Co., Indianapolis, Ind.
 Butler Mfg. Co., Boston, Mass.
 Disston, Henry & Sons, Phila., Pa.
 National Saw Co., Newark, N. J.
 Simonds Mfg. Co., Fitchburg, Mass.
- Saw Sets.**
 Taintor Mfg. Co., 84-86 Chambers, N.Y.
- Saw Vises.**
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Sawing Machines.**
 Q. & C. Co., Chicago, Ill.
- Scales, Manufacturers of.**
 Buffalo Scale Co., Buffalo, N. Y.
 Chatillon, John & Sons, 85-88 Cliff, N.Y.
 Standard Scale & Fixtures Co., St. Louis, Mo.
- Scrapers, Road.**
 Sidney Steel Scraper Co., Sidney, O.
- Screens, Coal and Ore.**
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Screw Cutting Machinery.**
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.
- Screw Drivers.**
 Brown, R. H. & Co., New Haven, Conn.
 Mayhew, H. H. Co., Shelburne Falls, Mass.
- Screw Machinery.**
 Hartford Machine Screw Co., Hartford, Conn.
- Screw Plate and Pipe Cutter.**
 Jarecki Mfg. Co., Erie, Pa.
- Screws, Makers of.**
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Haskell Co., Pawtucket.
 Miles, F. S., 205 Quarry, Philadelphia.
 Reynolds & Co., New Haven, Conn.
 Worcester Machine Screw Co., Worcester, Mass.
- Scroll Saws.**
 Barnes, W. F. & John, Rockford, Ill.
 Seneca Falls Mfg. Co., Seneca Falls, N.Y.
- Seythe Stones and Whetstones.**
 Pike Mfg. Co., Pike Sta'n, N. H.
 Cleveland Stone Co., Cleveland, O.
- Sewer Pipes.**
 Sharon Clay Mfg. Co., Sharon, Pa.
- Shafting, Makers of.**
 Brown, A. & F., 17 Dey St., N. Y.
 Cresson, Geo. V. Co., Philadelphia, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 Sellers, Wm. & Co., Inc., Phila., Pa.
 Stow Mfg. Co., Binghamton, N. Y.
- Shaft Support.**
 Decatur Shaft Support Co., Decatur, Ill.
- Shaped Iron and Steel, Manufacturers of.**
 Aetna-Standard Iron & Steel Co., Bridgeport, O.
 East Chicago F'dry Co., Chicago, Ill.

- Allentown Rolling Mill**, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
The Phoenix Iron Co., Phila., Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**
Acme Shear Co., Bridgeport, Conn.
Clauss Shear Co., Fremont, Ohio.
Heinrichs, R. Sons Co., Newark, N. J.
- Sheet Iron and Steel, Manufacturers of.**
Etna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Jersey City Galvanizing Co., 112 John St., N. Y.
Mahoning Valley Iron Co., Livingston, Ohio.
Morehead-McCleane Co., Pittsburgh.
Pleron & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Zinc.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
- Shelf Brackets.**
Atlas Mfg. Co., New Haven, Conn.
Stanley Works, New Britain, Conn.
- Shoe Stands.**
Kupferle, Jno. C., St. Louis, Mo.
- Show Cases.**
Union Show Case Co., Chicago, Ill.
- Sinks.**
Douglas, W. & B., Middletown, Conn.
- Skate Grinding Machinery.**
Perkins, Chas., Bridgewater, Mass.
- Skates, Ice.**
Dame, Stoddard & Kendall, Boston, Mass.
Keene Mfg. Co., Keene, N. H.
Winslow, Sam'l., Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**
Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Ct.
Winslow, Sam'l., Skate Mfg. Co., Worcester, Mass.
- Slag Machines.**
Cambria Iron Co., Johnstown, Pa.
- Slaw Cutters.**
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Smelting Works.**
Reeves, Paul S., 760 S. Broad, Phila.
- Soldering Coppers.**
Covert Mfg. Co., West Troy, N. Y.
- Soldering Salts.**
Shepard, Sidney & Co., Buffalo, N. Y.
- Speaking Tubes.**
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.
- Special Machinery**
Rhodes, L. E. Co., Hartford, Conn.
- Spelter.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
- Spoons and Forks.**
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Springing Goods.**
Hartley & Graham, 313-315 E'way, N. Y.
Schoverling, Daly & Gales, 302 Broadway, N. Y.
- Spring Hinges.**
Clark & Cowles, Plainville, Ct.
Coiled Wire Belting Co., Jersey City, N. J.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Stamping Works.**
Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**
Cobb & Drew, Plymouth, Mass.
Titchener, E. H. & Co., Binghamton, N. Y.
- Steam Gauges.**
Bristol Co., Waterbury, Conn.
Star Brass Mfg. Co., Boston, Mass.
- Steam Hammers, &c., Makers of.**
Dienelt & Eisenhart, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.
- Steam Heating & Oil Separators.**
Webster, Warren & Co., Camden, N. J.
- Steam Separators.**
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden, N. J.
- Steam Specialties.**
D'Este & Seely Co., Boston, Mass.
Lunkenheimer Co., Cincinnati, O.
- Steam Traps.**
D'Este & Seely Co., Boston, Mass.
- Steel, Cold Rolled Strip.**
Superior Steel Co., Pittsburgh, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabet.**
Hoefig, C. W., 52 Fulton St., N. Y.
Krogsrud, W., 61 Fulton St., N. Y.
- Steel Importers.**
Abbott, Wheelock & Co., N. Y. and Boston.
Henson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Millne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, R. & Co., E'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**
Etna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Hermann & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crecent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Landon Iron Co., 58 William St., N. Y.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorehead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Bowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Superior Steel Co., Pittsburgh, Pa.
Wordlaw, S. & C., Sheffield, Eng.
Wetherell Bros., 93 Liberty St., N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel, Manufacturers' Agents.**
Barns, C. K. & Co., Philadelphia, Pa.
Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 E'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierison & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders, Rolling.**
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Croissant, M., Albany, N. Y.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Oster Mfg. Co., Cleveland, O.
Saunders Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stone Saws and Planers.**
Lincoln Iron Works, Rutland, Vt.
- Store Fixtures.**
Wernicke Co., Minneapolis, Minn.
- Stove Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**
Cheney, S. & Son, Manlius, N. Y.
- Stove Trucks.**
Gwinner Mfg. Co., Hamilton, Ohio.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Street Lamps.**
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Structural Iron Work.**
Lindsay, Jas. G. & Co., Phila., Pa.
- Structural Tubing.**
National Structural Tubing Co., Potter Bldg., N. Y.
- Sulphuric Acid.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
Cheese Bros., Pittsburgh, Pa.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Shelton Co., Birmingham, Conn.
- Tack and Nail Machinery.**
Kimball Bros. & Co., Brockton, Mass.
Sweetser, W. A., Brockton, Mass.
- Taps and Dies.**
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mach. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mach. Co., Phila.
- Theatrical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Thrust Collars.**
Gouverneur Mach. Co., Gouverneur, N. Y.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngstown, Ohio.
- Tire Upsetters.**
Butts & Ordway, Boston, Mass.
- Toe Calks, Steel.**
Burke, P. F., Boston, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N. Y.
- Tool Holders.**
Armstrong Bros. Tool Co., Chicago, Ill.
- Tools.**
Brown, R. H. & Co., New Haven, Conn.
Leavitt Mch. Co., Orange, Mass.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Stearns, E. C. & Co., Syracuse, N. Y.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
Tower & Lyon, 95 Chambers St., N. Y.
- Tools, Blacksmith and Wheelwright.**
Burial Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Oster Mfg. Co., Cleveland, Ohio.
Phumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters'.**
Saunders Sons, D., Yonkers, N. Y.
- Torches, Oil and Gasoline.**
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.
- Transom Litters.**
Wollensak, J. F., Chicago, Ill.
- Tree Holders.**
Allentown Hdw. Works, Allentown, Pa.
- Trucks, Manufacturers of.**
Clark, G. P., Windsor Locks, Conn.
- Tubes, Seamless Drawn Copper.**
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Avery Stamping Co., Cleveland, O.
Long's, John S. Son & Co., 4 Fletcher St., New York.
Shelby Steel Tube Co., Shelby, Ohio.
U. S. Projectile Co., Brooklyn, N. Y.
- Tubing, Structural.**
National Structural Tubing Co., Potter Bldg., N. Y.
- Tumbling Barrels.**
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
- Ventilating Fans.**
Buyett & Smith Mfg. Co., Detroit, Mich.
Perkins, B. F. & Son, Holyoke, Mass.
- Ventilator Appliances.**
Howard & Morse, 16 Fulton St., N. Y.
- Vise Jaws.**
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Trenton Iron Co., Trenton, N. Y.
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- Wire Cloth.**
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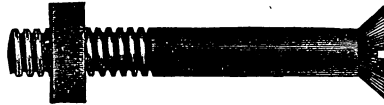
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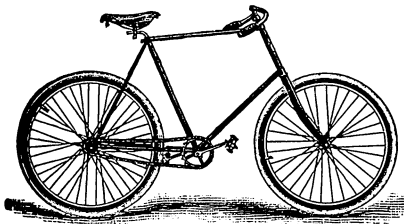
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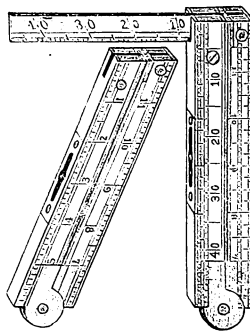
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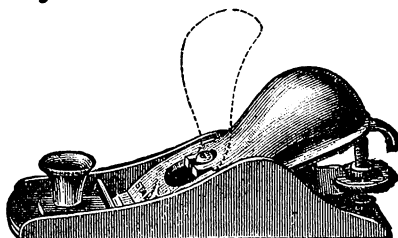
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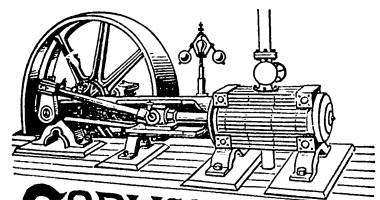
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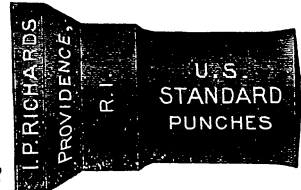


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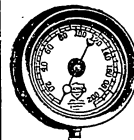
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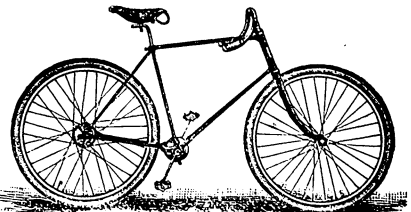
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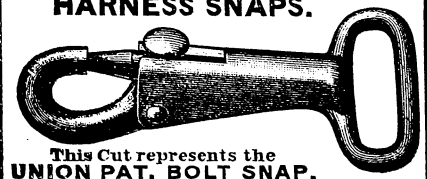
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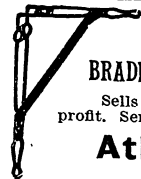
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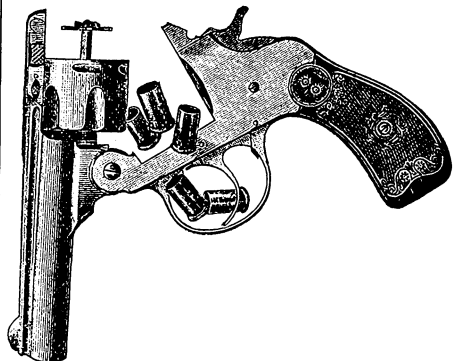
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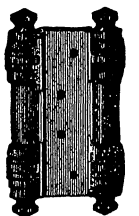
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Beaman & Smith Standard Milling Machine.

The standard milling machine designed and built by Beaman & Smith of Providence, R. I., is somewhat in the nature of a special machine, inasmuch as it is to do such milling as cannot to advantage be done on a regular market tool. There are many quite heavy pieces which are to have light milling cuts, such as milling of ports in steam cylinders, cuts on the ends of pieces 24 to 30 inches long, &c., many pieces difficult to hold on an ordinary table miller. This machine supplies such wants. The spindle is 8 inches in diameter, and is driven with a 20-inch gear, meshing into a 5-inch pinion attached to a quill carrying a four section cone for $3\frac{1}{2}$ inch

The cross feed is 20 inches by hand or power and has automatic stop. The machine is furnished with countershaft, wrenches, &c., and weighs complete 5500 pounds.

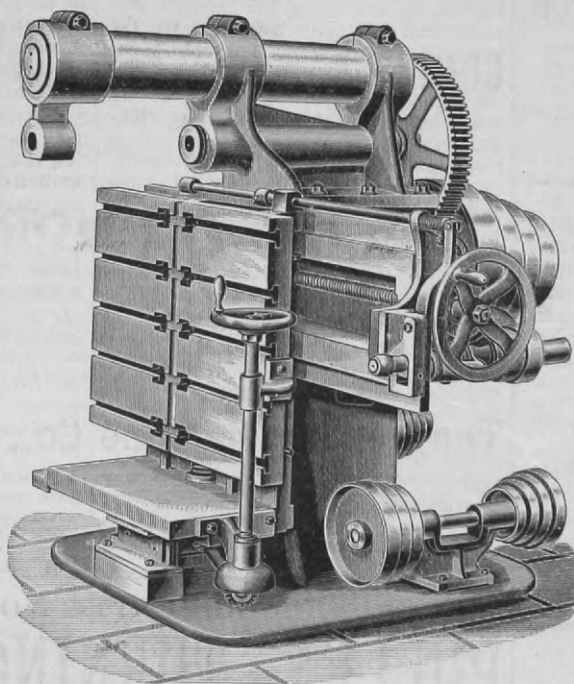
A Great Chicago Power House.

A number of references have been made recently in these columns to contracts for machinery which were being placed by the West Chicago Street Railroad Company of Chicago. Authentic information has been obtained with regard to the company's plans from Chief Engineer S. Potis, Jr., which is as follows:

A power house is to be located at the southwest corner of Washington Bou-

be furnished complete with all pumps, indicators, oiling system, heaters, &c., by Fraser & Chalmers. Two overhead traveling cranes will be built, spanning the entire engine room. The boiler stack will be 16 feet in diameter and 240 feet high, 48 feet square at the base where the foundation commences, while the brick work proper will be about 27 feet square. It will contain over 1,000,000 brick and will be one of the largest stacks in the city. The plant is to be ready for operation by February 1, 1895.

The next meeting of the Western Foundrymen's Association will be held on Wednesday, October 24, at 7.30 p.m., in Room 701, Western Union Building, Chicago. A paper by Thos. D. West, entitled, "Comparison of



BEAMAN & SMITH STANDARD MILLING MACHINE.

belt on 11-inch, $13\frac{1}{2}$ -inch, 16-inch and $18\frac{1}{2}$ -inch section diameters respectively. The ratio of the cone to the spindle is four to one. The spindle head has 1-inch lateral adjustment. The overhanging arm is 6 inches in diameter, forming a stiff support when milling with a gang of cutters on the arbor. The arm can be removed if desired. The table or platen face is vertical, 32 inches long and 25 high, has T-slots, as shown, with tongue grooves running crosswise, besides one central vertical groove for locating and fastening fixture or work. The cross slide or saddle is guided by V-slide on front of the standard, and also rests against the front of the standard at the lowest point beside an adjustable slide on the extreme front of the base, all of which allows very heavy pieces to be fastened to the platen without altering the alignment of the slides in the least. The vertical adjustment is 6 inches, and is operated by a hand wheel on a vertical shaft.

levard and Western avenue, from which electric power will be furnished to nearly all the horse car lines operated at present by the company. This house is to be a handsome and very substantial structure, faced with pressed brick and cut stone, and will have steel floors. The boiler plant will consist of 20 Stirling water tube boilers, of about 400 horse-power each, built specially to suit the requirements of the street railroad company's service. There will ultimately be six 2000 horse-power cross compound non-condensing Corliss engines. At present the company are putting in three 2000 horse-power engines and one 1000 horse power, which are being built by Fraser & Chalmers of Chicago. These engines are designed to suit the generators which will be used. The generators will be furnished by the Siemens & Halske Company of Chicago. There will be three 1500 K. W. machines and one 750 K. W. machine, running respectively 75 and 85 revolutions. The plant will

Strength in Specialty Mixtures of Cast Iron," will be presented. As this paper will outline Mr. West's ideas on the test bar, and will contain some very valuable suggestions, it will be well worth the while of every foundryman to be present at the meeting to hear the paper and discussion. All foundrymen, whether members of the association or not, are cordially invited to be present and to join in the discussion. Those who intend to come will confer a favor on the secretary, B. M. Gardner, 1141 Monadnock Block, if they will so notify him in advance.

A very large scheme is under consideration in Pittsburgh, it being not less than to manufacture fuel gas on an enormous scale. The plan is to put up large works in the vicinity of Pittsburgh and deliver coal mined in the district into the bins of the works. The company are to have a capital of \$10,000,000.

The Casting Temperature of Soft Steel.—I.

The attention of metallurgists and steel manufacturers has been recently directed toward the subject of "The Physics of Steel," in proof of which we have the numerous papers and discussions that have appeared in the proceedings of the American Institute of Mining Engineers under this title. This comprehensive subject has been divided into a number of heads (see *The Iron Age*, March 1, 1894 page 407), facilitating reference, and giving an opportunity to discuss a detached portion of the general subject without laying oneself open to the charge of having failed to cover the entire ground embraced under so broad a title as "The Physics of Steel." Of this opportunity the writer now takes advantage, and presents the results of an extended series of investigations on casting temperature, particularly high casting temperature and its effects on steel.

The steel furnishing the material for research was made entirely by the basic Bessemer process. Such steel, because of the complications introduced in the basic process by the lime additions, basic lining and after blow, presents many more difficulties in its production than does acid Bessemer steel. The irregularities met with in basic iron are greater, the end of the blow is more difficult to determine and the temperature indications are deceptive, which makes "scrapping" an extremely uncertain factor. Again, the basic Bessemer process is not, in its application, sufficiently widespread in America, nor has it been so long established, as to have furnished much experience for a blower to fall back upon. It follows from these considerations that we may expect to find great variations in the temperature and other properties of the American steel here subjected to study. Such is indeed the case, and the record which the writer has at his disposal has provided a veritable mine from the metallurgist's point of view.

Some explanation of the course of treatment undergone by the steel will be necessary, as well as a word or two in regard to its quality. The material was all rolled for structural purposes, having a range in ultimate strength from 50,000 to 70,000 pounds per square inch, and yielding tank, bridge, shell and flange qualities; in a word, it was soft or mild steel. A heat weighing 10 tons was cast into four equal ingots, which were stripped as soon as they became stable and charged at once into heating furnaces. The ingots were then rolled down in a blooming mill and sheared to blooms having a section of from 30 to 100 square inches. These blooms then cooled off entirely in the open air. This portion of the treatment has an important bearing, as will be seen later. The blooms, being reheated, were rolled into plates from $\frac{3}{4}$ to $1\frac{1}{2}$ inches in thickness, in a sheet, sheared or universal mill.

Let us call the normal casting temperature of molten steel a medium temperature and the corresponding heat of steel a medium heat. Under the term medium are classed all heats which, upon casting, leave a small skull in the casting ladle, and also such hotter heats as exhibit none of the characteristics of truly hot steel. A casting temperature which leaves much skull in the casting ladle, but which does not require to be poured over the edge of the ladle, we shall call a low casting temperature and

the heat of steel a warm heat. A temperature above the normal let us call a high casting temperature and the heat a hot heat. Cold heats, called also top-casts and top pours, cannot be drawn through the nozzle in the bottom of the casting ladle, but must be cast over the edge of the ladle.

The main subject will be treated in its various divisions in the order outlined in the following scheme. This arrangement will also serve as a convenient summary of topics:

Influence of	Low Medium High	casting temperature on	The molten steel. The physical tests. The ingots. The blooms. The tensile tests. Segregation and analyses.
--------------	-----------------------	------------------------------	---

The physical tests were made from a 4-inch test ingot cast when the ladle was about half emptied. This small ingot was stripped and placed, as quickly as possible, in a forge fire, reheated to a forging temperature and hammered out into several tests for bending and breaking. The cold physical tests therefore represent the cooled off blooms, both having undergone one reheating and working from the comparatively high temperature at which the ingots were stripped. The tensile tests were cut from the finished plates and have therefore undergone an additional reheating and working, but from the cold. In a few cases, quoted subsequently, the 4-inch test ingots were forged down to $1\frac{1}{2}$ inches and a portion allowed to cool, then reheated, and the physical tests forged out in another heating. Under such circumstances the physical tests should, equally with the tensile tests, represent the plates. The chemical analysis which is to represent the heat is made from drillings taken from a piece of the forged out physical tests.

Low Casting Temperature.

Cold heats, the mere mention of which sends a shiver down the spine of the inexperienced blower, do not require a lengthy explanation to show why they are objectionable. The heavy skulls, large loss and extra labor necessary to clean up are sufficient to condemn heats cast at a temperature considerably below the normal. Even should such heat produce the finest of steel physically and chemically, these qualifications would not balance the heavy scrap loss.

What we have called warm heats are, however, sure to be sprinkled occasionally throughout a week's run when making basic Bessemer steel and aiming at the medium temperature which leaves a small skull in the casting ladle. The difference in absolute temperature is trifling between a good medium heat and a warm heat, so that two heats, blown under similar conditions and having the same absolute temperature, may yet have, relatively, one a medium casting temperature and the other a low casting temperature, because a difference in chemical constitution affects the melting points. This difference in chemical constitution as affecting the fluidity of the steel is an important factor in basic work. Given the carbon content in steel 0.10 per cent. or less, and the manganese content 0.40 per cent. or less, the writer has never yet seen a cold heat containing as much as 0.10 per cent. phosphorus nor a very hot heat containing as little as 0.02 per

cent. phosphorus (accidents excepted) in a series of 5000 basic blows. The percentage of phosphorus in the first case so lowers the melting point that the steel possesses the fluidity of hot heats, and the low percentage of phosphorus in the second case so raises the melting point that the steel retains its perfect fluidity but a short time, and therefore usually casts warm or medium.

Warm heats usually yield very fine physical tests, bending to 180° flat and

showing a fibrous or largely fibrous fracture. Chemically they are, as a rule, superior to the ordinary run of heats, because, in a great majority of cases, the low casting temperature is associated with low phosphorus and the steel is of flange or fire box quality. If a warm heat be close to the cold limit the ingots produced may be scrappy or not perfectly welded throughout. The blooms of warm heats show no particular characteristics traceable to low casting temperature. The tensile tests are normal and segregation is but slightly apparent, if at all, so that in all respects except scrap loss warm heats produce decidedly the best steel, and hence the German practice of casting at a temperature so low that a skull is left in the ladle. In many works abroad and in American works the spiegeleisen or ferromanganese is charged unmelted into the casting ladle. Then when a warm heat occurs, the recarbonizers are sometimes not entirely melted, or sometimes melted, but not well mixed throughout the steel. In either case an excess of carbon and manganese may be found in certain parts of the heat—notably at the top of the last ingot poured. If the heat be rabbled in the ladle such conditions may be avoided. A few examples (Table I) will show to how great an extent this imperfect mixing of the recarbonizers may occur. Analysis No. 1 was from the 4 inch test ingot taken half way through the pour. The analysis numbered 2 was made from drillings from a finished plate of the same blow.

Table I. Analyses Showing the Effects Produced by the Imperfect Mixing of Recarbonizers.

Blow number.	Analysis number.	Carbon.	Sulphur.	Phosphorus.	Manganese.
6,021.....	1	0.11	0.11	0.030	0.405
	2	0.28	0.114	0.040	1.530
9,411.....	1	0.12	.....	0.035	0.455
	2	0.16	0.062	0.020	1.015
9,752.....	1	0.11	.....	0.025	0.473
	2	0.17	0.053	0.025	1.110
8,9-2.....	1	0.11	.....	0.050	0.400
	2	0.15	0.069	0.050	1.325
9,690.....	1	0.08	.....	0.060	0.365
	2	0.13	0.066	0.055	1.335
9,485.....	1	0.09	0.055	0.045	0.460
	2	0.14	0.068	0.045	1.180

The following analyses (Table II) taken from different parts of the same

warm heat may serve as an even better example of the irregular mixing of the ferromanganese and spiegeleisen which sometimes occurs. The excess of phosphorus, associated with excess of carbon, is probably derived from the phosphorus in the spiegeleisen :

Table II.—Analyses from a Single Heat, Showing the Effects Produced by Imperfect Mixing of the Recarburizers.

Test No.	Carbon.	Phosphorus.	Manganese.
1.....	0.28	0.095	0.880
2.....	0.25	0.070	0.870
3.....	0.18	0.080	0.870
4.....	0.23	0.075	0.835
5.....	0.14	0.045	0.700
6.....	0.14	0.035	0.725
7.....	0.17	0.050	0.755
8.....	0.20	0.045	0.790
9.....	0.20	0.080	1.200
10.....	0.16	0.045	0.800

Finally, as showing the portions of the heat affected by the imperfect mixing of the recarburizers, note these analyses (Table III) of ladle tests taken during the teeming of a warm to medium heat. Test No. 1 represents the bottom of the first ingot, No. 4 the top of the first ingot and Nos. 2 and 3 the intermediate portions of the first ingot. Test No. 5 represents the bottom of the second ingot, No. 8 the top and Nos. 6 and 7 the intermediate portions of the second ingot. In all there is a succession of 16 tests at equal intervals, representing the four ingots cast :

Table III.—Analyses from a Single Heat, Showing the Effects Produced by Imperfect Mixing of the Recarburizers.

	Test No.	Carbon.	Sulphur.	Phosphorus.	Manganese.
Ingot No. 1:					
Bottom.....	1	0.08	0.074	0.045	0.390
Middle.....	2	0.08	0.074	0.045	0.370
Middle.....	3	0.09	0.077	0.035	0.400
Top.....	4	0.08	0.071	0.045	0.400
Ingot No. 2:					
Bottom.....	5	0.08	0.073	0.055	0.420
Middle.....	6	0.09	0.070	0.055	0.410
Middle.....	7	0.08	0.070	0.055	0.425
Top.....	8	0.09	0.074	0.055	0.410
Ingot No. 3:					
Bottom.....	9	0.09	0.073	0.050	0.415
Middle.....	10	0.09	0.078	0.055	0.420
Middle.....	11	0.10	0.079	0.065	0.430
Top.....	12	0.09	0.071	0.065	0.430
Ingot No. 4:					
Bottom.....	13	0.10	0.078	0.080	0.430
Middle.....	14	0.10	0.079	0.070	0.435
Middle.....	15	0.13	0.079	0.090	1.070
Top.....	16	0.15	0.079	0.115	1.590

Manifestly, the remedy for such effects is to charge molten spiegeleisen or preferably to add all recarburizers in the converter molten, if rabbling is not practiced, solid, if the steel is rabbled in the converter.

Medium Casting Temperature.

A brief summary will suffice under this head. A medium casting temperature is generally attained by blowing hot and adding scrap in the converter near the end of the after blow until the steel is cooled to the desired point. In the basic process there are besides two other means of obtaining a medium temperature; the first by blowing an iron poor in combustibles, especially phosphorus, and the second by blowing with an excess of lime or with lime additions. Both means are objectionable—the first because it offers no way of getting the temperature up if a cold run

sets in, and the second because it greatly increases the loss of iron by oxidation.

The molten steel at a medium temperature is smooth and quiet, and if soft, very white without any yellowish tinge. It pours quietly in a dead stream and may sink a little, remain stationary or rise slightly in the molds. After the pour and before the ingots are capped, the molten surfaces of the ingots should have the appearance of frothing cream, with white scattering sparks arising and floating away.

The physical tests generally bend to 180° flat, and the fractures are largely fibrous, the crystalline portions of the fractures showing coarse grains of a dull lustre.

The ingots from medium heats are usually free from blow holes for about 1 to 1½ inches in from the side surfaces. If properly handled they should have square, sound tops with no suggestion of pipe, and the sides should show no cracks, holes or scabs.

The blooms produced are dense and present unblemished surfaces. It must be understood, however, that a good medium temperature at casting will not always produce sound ingots and blooms independent of all other considerations. The chemical constitution of the steel must be within certain limits. Good, soft basic steel, to yield sound ingots, may vary within these limits: Carbon, 0.05 per cent. to 0.13 per cent.; sulphur under 0.06 per cent.; phosphorus under 0.08 per cent.; manganese, 0.15 to 0.60 per cent. A combination of low manganese and high sulphur in the steel will produce cracked and scaly blooms at whatever temperature cast.

Tensile tests of medium heats are normal, with silky fractures and tensile strengths which should correspond closely with the estimated tensile strengths calculated by table from the analysis of the 4 inch test ingot.

Experience has shown that segregation occurs in medium cast steel. The extent of this segregation is proportioned to the amount of impurities present in the steel. The segregation which may occur in medium cast steel of a composition of, we will say, carbon 0.10 per cent., sulphur 0.04 per cent., phosphorus 0.03 per cent., and manganese 0.35 per cent., will not usually force

Table IV.—Analyses Showing Limited Segregation in Medium Heats.

TEST INGOT.				
Blow No.	Test No.	Carbon.	Phosphorus.	Manganese.
A.	1	0.09	0.080	0.205
	2	0.18	0.050	0.250
B.	1	0.11	0.030	0.385
	2	0.09	0.045	0.288
C.	1	0.10	0.030	0.373
	2	0.03	0.025	0.398
D.	1	0.11	0.040	0.395
	2	0.11	0.030	0.373
E.	1	0.11	0.040	0.395
	2	0.09	0.030	0.333
F.	1	0.11	0.075	0.430
	2	0.10	0.055	0.408
G.	1	0.09	0.050	0.355
	2	0.10	0.070	0.333
H.	1	0.12	0.040	0.465
	2	0.11	0.035	0.475

FINISHED PLATE.

Blow No.	Test No.	Carbon.	Sulphur.	Phosphorus.	Manganese.
AA.	1	0.11	0.070	0.035	0.460
	2	0.11	0.075	0.030	0.475
BB.	1	0.09	0.079	0.020	0.305
	2	0.09	0.127	0.035	0.315
CC.	1	0.09	0.083	0.025	0.480
	2	0.09	0.047	0.030	0.355
DD.	1	0.09	0.053	0.040	0.470
	2	0.09	0.077	0.040	0.440
EE.	1	0.09	0.050	0.045	0.405
	2	0.08	0.060	0.055	0.405
FF.	1	0.12	0.086	0.040	0.288
	2	0.11	0.073	0.030	0.335

In addition to these examples in detail, which were selected from regular analyses made, there are presented in Table V the summaries from a number of heats of which numerous reanalyses were made expressly to determine the amount of segregation that might occur in medium heats:

Table V.—Analyses Showing the Extent to which Segregation May Occur in Medium Heats.

Blow number.	Number of tests analyzed.	Maximum carbon.	Minimum carbon.	Maximum sulphur.	Minimum sulphur.	Maximum phosphorus.	Minimum phosphorus.	Maximum manganese.	Minimum manganese.
A1.....	15	0.15	0.11	...	...	0.080	0.055	0.482	0.403
B1.....	4	0.07	0.07	...	...	0.045	0.040	0.175	0.160
C1.....	32	0.09	0.07	0.072	0.060	0.080	0.045	0.475	0.350
D1.....	32	0.07	0.03	0.033	0.029	0.030	0.020	0.230	0.175
E1.....	32	0.08	0.05	0.080	0.040	0.060	0.025	0.370	0.188

any portion of the heat into another grade. Nor would it be possible, as a rule, to obtain from different parts of the heat tests showing tensile strengths which varied greatly. The following examples (Table IV) of limited segregation in soft heats cast at a medium temperature will serve to illustrate this point more clearly. As in Table I, the first analysis is that of the 4 inch test ingot, the second being from a finished plate:

High Casting Temperature—Hot Heats.

The hot heats produced in basic Bessemer work may result from two causes. In one case, with which we shall have most to do, the analysis of the steel produced is normal and within the limits already laid down for soft Bessemer steel, and the excess of temperature is due to the conditions of the blow. In the other case, which we shall not con-

sider at length, a comparatively large percentage of phosphorus (more than 0.10 per cent.) is contained in the steel at the end of the blow, equally distributed throughout the heat. The relatively high temperature of such steel is due to its lower melting point. High phosphorus heats have no excuse except accidents for their existence. When made in regular course they argue carelessness on the part of the blower. High phosphorus steel may be recognized by a number of peculiarities. The slag, as it runs from the ladle, is thin and watery; in the casting ladle the slag sometimes attacks the ladle lining, causing a reversion of phosphorus from the slag into the steel at the slag line.

	Car- bon.	Sul- phur.	Phos- phorus.	Man- ganese.
Test ingot.	0.09	.....	0.125	0.428
Tensile test.	0.10	.....	0.165	0.380
Test ingot.	0.14	0.080	0.095	0.453
Tensile test.	0.17	0.069	0.160	0.460
Test ingot.	0.11	.....	0.090	0.400
Tensile test.	0.13	.....	0.200	0.875

In Table VI are given the summaries of the reanalyses of several heats, the test ingots of which, when analyzed, showed a phosphorus content exceeding 0.10 per cent. In the case of the blow marked C2, in addition to the 32 tests

Table VI.—Analyses Showing Extent to which Segregation May Occur in High Phosphorus Heats.

Blow number.	Number of tests analyzed.	Maximum carbon.	Minimum carbon.	Maximum sulphur.	Minimum sulphur.	Maximum phosphorus.	Minimum phosphorus.	Maximum manganese.	Minimum manganese.
A2.....	5	0.18	0.11	0.083	0.038	0.200	0.080	0.565	0.433
B2.....	15	0.12	0.08	.....	.....	0.135	0.050	0.419	0.180
C2.....	32	0.11	0.07	0.091	0.034	0.150	0.050	0.470	0.380

The steel itself is virulent. It runs from the ladle nozzle in a rapid, twisting stream and has a yellow, vitreous appearance, very characteristic. It cuts off the stopper rod or cuts into the stopper, cuts holes in the mold stools and "freezes" to the sides of the molds when it has solidified. Phosphoric steel rises abnormally in the molds, sometimes as much as 25 per cent. of its height. It boils wickedly after the pour has been completed, remaining a long time molten, and sends up a shower of rapid, yellow sparks which do not soar upward like the sparks from quiet steel, but which drop down outside the molds as soon as their upward impetus is exhausted. Such steel may yield apparently sound ingots and blooms with few surface defects. On account of its low melting point phosphoric steel usually rolls nicely also. But it is not compact.

The forged tests of high phosphorus steel show crystalline fractures with a fine glittering grain, and the bending tests seldom reach 90° before breaking. The tensile tests often exhibit the peculiarities of the forged tests, bending poorly and showing up crystalline in the fractured surfaces. If the carbon and manganese be not too high, plates of phosphoric steel are often improved by annealing. The untreated finished product is cold short, breaking under a bending or punching test. On account of these several properties, high phosphorus steel, when the deductions of the blower have been confirmed by chemical analysis, is cut at the blooming mill into convenient scrap sizes and charged in a basic open hearth furnace for remelting.

Phosphoric hot heats offer the finest field for the play of the forces inducing segregation. A protracted state of fluidity, with a considerable quantity of at least one metalloid in the mother metal, tends to exhibit the phenomena of segregation in soft basic steel to the greatest degree. Data for phosphoric steel is not abundant, as steel of this quality is rarely made. Three heats, however, showed the following variations in composition from the 4-inch test ingot to a finished plate:

taken while blooming, after the forces of segregation had been operative, there were also taken 17 ladle tests during teeming. The teeming tests varied in analysis between these limits: Carbon, 0.08 to 0.10 per cent.; phosphorus, 0.10 to 0.115 per cent.; manganese, 0.40 to 0.48 per cent., thus proving the practical homogeneity of the metal as it lay in the casting ladle.

The Work of the Wreckers.

The World's Columbian Salvage Company are making rapid progress in the work of wrecking the buildings of the late World's Fair at Chicago. The entire southeastern portion of the grounds has now been completely cleared of the numerous structures which stood there, including the Shoe and Leather, Dairy, Anthropological, Sewerage and Saw-mill buildings, the Stock Pavilion and the once famous Colonnade. The Forestry Building was removed by other parties. The wrecking of the great Transportation Building has about been completed. The Fisheries and Woman's buildings and the Choral Hall have been leveled. The handsome dome of the Horticultural Building is being carefully taken down, to be re-erected at some point in Ohio. The Government Building is the only large building which has not yet been touched. The Manufactures and Liberal Arts, Electricity, Mines and Mining, Administration, Machinery and Agricultural buildings and the Terminal Station were all burned in the great fire on the grounds, and nothing remains of them but the iron and steel, which aggregates about 25,000 tons, now being sheared and prepared for market. The two Service buildings have been allowed to remain standing, as they are needed by the Salvage Company for office purpose.

A new device for the scraping of boiler tubes has lately been introduced by Laurence & Promell, boiler makers, of Geelong, Australia. The scraper works on a hinge, which is closed as the

article is pushed into the tube, but the act of drawing it out opens the hinge, and thus throws out two disks which can be gauged to fit any tube. The disks fit closely to the inside of the tube and effectively clean away all dirt and scale.

Gear Teeth.

BY S GROVES, PITTSBURGH.

Not so very long ago the common practice was to make gear teeth short and to have only one tooth in gear at a time. But the evolutionist came upon the scene, proclaimed the advantage of lengthening the teeth, and thus getting at least two teeth in gear, with corresponding increase in driving power. The old plan was quietly buried, and the subsequent endeavor of the practical designer of gears has been to get three teeth in gear, with driving contact as near the root of the tooth as possible. But somehow the modern engineer has never been satisfied with the conventional system; for however sound in theory the three teeth in contact claim is, no sooner do the teeth wear, the bearings slacken and abnormal vibration set in than this Edenic state is lost; the third and second teeth originally in contact fall out of touch, and "the work is almost invariably done by a single pair of cogs." Many a superintendent of heavy mill and forge machinery has been at a loss to account for the development of unpleasant knocking and final breaking of the teeth of gears which seemed to run perfectly when he first set the machinery in motion. Upon examination, he found that the tooth fracture showed indications of crystallization. The gear maker is instantly blamed for putting in inferior metal, whereas the whole trouble is due to changed conditions, for which the teeth were not designed. Worn teeth and bearings lead to the falling out of touch of the third and second teeth, and these, instead of rolling in contact as at first, now drop into position; hence the knocking and consequent crystallization, and as a corollary the teeth break off, for the single long tooth has now to bear as a severe cantilever strain the whole of the driving power on the gears, with the inevitable result.

Numerous devices for overcoming these frequent troubles have been tried. Helical gears, for example, Fig. 1, for which smooth running and greatly increased strength are claimed. It is admitted that gears with this form of tooth are ideal, if accurately molded and perfectly erected. The slightest irregularity however, in spacing of teeth and fitting on shafts is almost fatal to their effective working, and since clockwork finish on heavy gears is not expected, either from the machinery molder or rolling mill mechanic, it may readily be understood why helical gears are not in great favor.

Then staggered tooth gears, Fig. 2, were introduced. Gears made on this plan would doubtless be very effective, providing the relative pitches of the two rows of teeth were accurately spaced, and the flanks made perfectly parallel to each other. Irregularity in either of these conditions makes staggered tooth gears the worst of all the forms extant. Even with the best modern improvements in the foundry, the difficulties in the way of attaining this necessary degree of accuracy and nicety are almost insuperable, and it is no wonder that the staggered tooth is in bad repute. It is a striking testimony to the modern

belief in progress and the march of intellect that, although mechanical engineers everywhere are dissatisfied with the current systems of gearing for high powers, and especially for rolling mill work, very few have ever thought of going back to the point from whence the gear systems started. The first to call attention to the advantage of so doing was the *London Engineer* of September 30, 1892, in an interesting article entitled "Teeth of Gears," being a favorable critical review of the 1891 report of Michael Longridge, chief engineer to the Engine, Boiler & Employers' Liability Assurance Company, (England). In his report, Mr. Longridge pleads for the return to the old system of short teeth for high powers, and cites instances where changes had been made upon his recommendation from long to short teeth, with manifest advantage. In one case of a pair of gears, the driver had 47 teeth and the driven 49, pitch $2\frac{1}{2}$, face $4\frac{1}{2}$; the teeth were made 1 inch long and $1\frac{1}{4}$ inches thick. The power transmitted was 100 indicated horse-power,



Fig. 1.—Double Helical Gear.

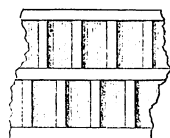


Fig. 2.—Staggered Tooth Gear.

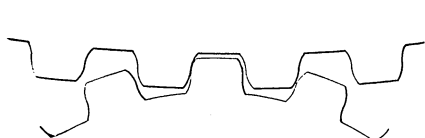


Fig. 3.—Union Teeth.

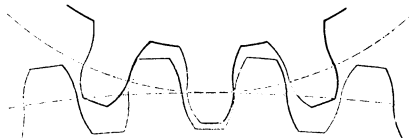


Fig. 4.—Cycloidal Teeth.

GEAR TEETH.

at a speed of 105 revolutions; mean pressure on teeth was therefore 3000 pounds, and the pressure per inch of width was 700 pounds. It appears that these gears were put in in September, 1888, and they held grease well and ran smoothly without any perceptible wear until February, 1892, when the engine was replaced. The *Engineer* backed up Mr. Longridge's conclusions thus: "We have said enough, we think, to show that Mr. Longridge has made a very good case for short teeth." The first in this country to adopt the short tooth system for high powers was Alexander Foster, manager of Singer, Nimick & Co.'s rolling mills, Pittsburgh, Pa. A bloom shear on the plant of the above mentioned firm was continually giving trouble, through the breaking of the gears. Mr. Foster, conceiving that stump teeth would prevent the trouble, ordered a pair of short tooth gears from the Union Foundry & Machine Company, Pittsburgh, Pa. The driver had 13 teeth, 5.12 pitch, 9 inch face; the driven, 29 teeth, 5.12 pitch, 9 inch face, and the teeth were made 2 inches long, instead of $3\frac{1}{4}$ inches, as would have been the case if designed in accordance with the ordinary epicycloidal method. These gears were put into operation in March, 1894, and are running now smoothly, without any indications of excessive wear, and every tooth intact.

So convinced is Mr. Foster of the economy and utility of this gearing that he has recently put in two more pairs of Union tooth gears in other parts of the West End plant under his management. Emboldened by the success of this experiment, the Union Foundry & Machine Company made a series of models and entered upon a number of experiments with a view of establishing a scientific formula for determining the precise length and contour of the teeth of gears, with only one tooth in contact at a time. They have already made gears with these teeth, ranging from 1.04 to 7 inches pitch, the smallest having 18 teeth and weighing 33 pounds, the largest 88 teeth and weighing $24\frac{1}{2}$ tons.

A pair of these gears, for motors, 1.04-inch pitch, with 62 and 18 teeth, are now running on the Sharpsburg line of the Citizens' Traction Company, Pittsburgh. It is a fast running suburban line of 6 miles. Although the teeth are only $\frac{3}{4}$ inch long and of the earliest shape, and the metal not of the best gear mixture, this pair has been running for over a month with success.

Perhaps the most important example of the application of this tooth to powerful work is the pair of gears recently made for the American Tin Plate Company, Elwood, Ind., under the supervision of Julian Kennedy of Pittsburgh. The gear is 16 feet diameter, 88 teeth, 7-inch pitch, 21 inch face, made in halves, and the pinion, 6 inch diameter, 32 teeth, 7-inch pitch, 21-inch face, made solid. This pair weighed $24\frac{1}{2}$ and $7\frac{1}{2}$ tons.

The Union tooth is so designed that only one tooth is in gear at a time from the start, and what is more important, owing to its shortness, the tooth is practically in shear instead of cantilever strain, thus greatly increasing the strength.

The J. D. Smith Foundry Supply Company of Cincinnati, Ohio, have issued from the press a supplementary catalogue, known as No. 22, and relating to tumbling barrels and exhaust fans. The goods are fully described and carefully illustrated, the various patterns being presented in such a way as to clearly show the essential features. There is also presented an interior view of a building, showing a good arrangement for placing a number of tumbling barrels and the manner suggested by the company for making the exhaust connections. Attention is also invited

to sand blast apparatus for cleaning small castings, forgings, &c., as well as removing the scale from steel and iron plates. Accompanying the supplementary catalogue are loose sheets illustrating some of the minor specialties of the company.

Arbitration and Conciliation.

Much interest is being taken in the forthcoming Congress of Arbitration and Conciliation, which will meet in Chicago on November 13 and 14, under the auspices of the Civic Federation of that city. The following programme has been prepared:

Historical View.

a. "England and the Continent."

b. "Australia and New Zealand," Prof. E. A. R. Gould, Johns Hopkins University.

c. "America," A. H. Walcott, Massachusetts Board of Arbitration; D. J. Ryan, Ohio Board of Arbitration.

General Principles:

a. "Distinction Between Compulsory and Voluntary Arbitration."

b. "Distinction Between Compulsory Arbitration and Public Investigation of Labor Disputes."

c. "Distinction Between Adjudication of Past Contracts and Settlement of Future Ones," Carroll D. Wright, United States Department of Labor.

d. "Distinction Between Arbitration and Conciliation," Mrs. Josephine Shaw Lowell, New York.

"Ethics of Arbitration," Archbishop Ireland, Felix Adler, Washington Gladden.

"Economics of Arbitration," Prof. Henry C. Adams, University of Michigan.

"How Far Can Arbitration Be Made Compulsory Without Infringement on Private Rights?" George R. Peck, C. S. Darrow.

Interstate and quasi Public Business:

a. "Railroads," A. F. Walker, receiver of Santa Fé Railway; Marvin Hughitt, president of Northwestern Railway; P. M. Arthur, Brotherhood Locomotive Engineers; F. P. Sargent, Brotherhood Locomotive Firemen.

b. "Mines," Charles Ridgely, P. J. McBride.

c. "Springer Bill," Representatives Springer, McGann, Tawney.

State Jurisdiction and Private Interests.

a. "Relation Between Employer and Employed," Chauncey M. Depew, T. V. Powderly. 1. "Building Trades," W. H. Sayward, secretary National Association Builders. 2. "Manufacturing," Martin Fox, Iron Molders' Union of North America; Charles A. Pillsbury, Minneapolis; N. O. Nelson, St. Louis.

b. "Necessity for Mutual Organization," Samuel Gompers.

c. "Sliding Scales and Kindred Methods," M. M. Garland, president National Iron & Steel Workers.

Closing address and recommendations, Joseph D. Weeks, editor *American Manufacturer*.

An important coal combination is reported from British Columbia which will affect the price of steam coal on the entire Pacific Coast. It is the settlement of a rivalry which has long existed between the Dunsmuir and the Vancouver (B. C.) Coal Company. The output of the mines at Wellington and Nanaimo is to be limited, so that the price of fuel can be raised. Coal already stands at \$7 a ton in Victoria, only 80 miles from the mines.

Compulsory Arbitration and Prices Fixed by Law.

Carroll D. Wright of Washington made an interesting speech before the Union League Club of Chicago on compulsory arbitration. Mr. Wright is quoted as having said:

The settlement of labor controversies by arbitration involves many considerations. Some of these reach to the vital questions of the usefulness and control of private property. The very sacredness of private property is involved. Heretofore the discussion of these questions has been limited to the settlement of controversies. But there are also underlying ethical and economical questions that must be considered, and the conclusions drawn from these considerations determine whether arbitration must be compulsory or voluntary. I cannot cover the general question to-night. I must limit myself to compulsory arbitration as applied to productive industry. The first great question is, "Shall a man have a right to do what he will with his own?" This question was asked in the Bible when the men employed in the vine yards at the eleventh hour received as much pay as those who had borne the heat and labor of the day. The men struck and the employer said: "Is it not lawful that I do what I will with mine own?" This ended the strike. No one questioned this right then. To-day we do question it. We say now, "No, he may not, if what he wishes to do with it is likely to injure the property or health of his neighbor." A man must submit to the wishes of the community in regard to his own property.

A third limitation is likely to be added to the answer of to-day. The answer will soon be, "No, not if you injure the standard of living of your neighbor." How then shall this last answer be met when it comes, so that industry shall not be killed by its consequences?

No way has yet been devised to prevent strikes. The most that can be done is to reduce them in number and severity. Arbitration cannot prevent them. Voluntary arbitration seems a logical answer, but Mr. Wolcott will soon discuss this.

I pass to compulsory arbitration. The advocates of this say that, 1, both parties to a dispute must be compelled to come into court; and that, 2, when the court issues its decree it must be enforced as any other decree would be enforced. Let us see how this will work. A is a manufacturer who pays his men on an average \$2 a day. Owing to some cause he finds he cannot pay this any longer and reduces wages to \$1.80. The men oppose this. They say they cannot live on less than \$2. The employer says he cannot pay more. The matter is taken before a compulsory court of arbitration. Suppose the court says the men must take the \$1.80. How can this be enforced? Say there are 5000 employees. Who can make them work? The constable, the sheriff, the *posse comitatus*, the military forces may all be called out. But none can make them work. The decree is dead from the beginning.

Suppose the court says the manufacturer must pay the \$2. But if he really cannot afford to do so, what must happen? The employer must do one of two things. Either he must adulterate his goods to make up the difference, or he must combine with other employers in a trust to keep up the prices. The

law will have compelled one of these things.

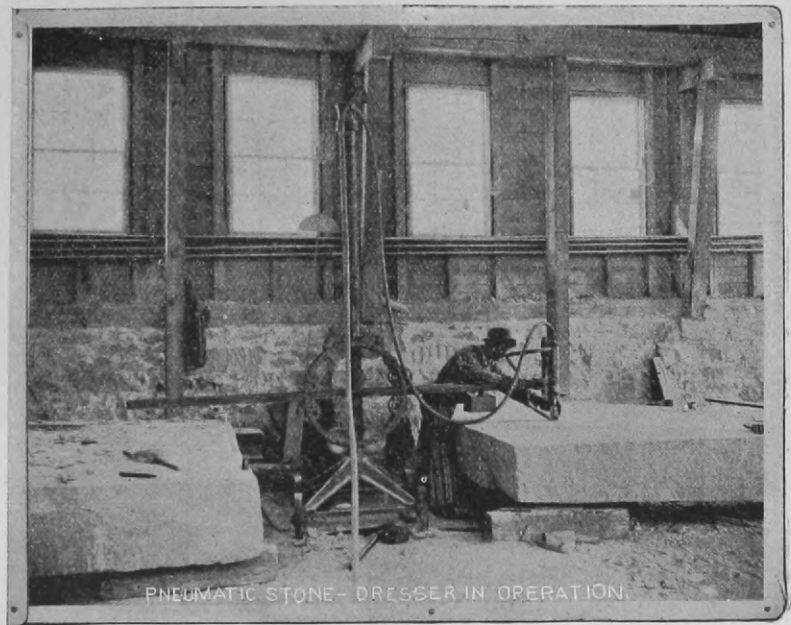
There is also an economic question to be considered. If the State says the employer must pay a fixed price for work it has practically fixed the price of the commodity. The law can fix the price, but it cannot compel the consumers to buy at that price.

The next logical step is to make it a penal offense not to buy at the price. Then why not let the law fix the prices of everything directly? It would be cheaper to do this directly than through the cumbersome machinery of compulsory arbitration. The workman would be a slave under compulsory arbitration. He has little "freedom of contract" now. He must submit to the ruling prices. But compulsory arbitration will destroy what little he has left. It will establish the prices at which he can sell the only commodity he possesses—that is, his labor. He must accept \$1.80 or not work at all if the court tells him to do so, even if the actual cost of living is \$2.

American Rapid Telegraph Company, which comprised 2684 miles of poles and 20,370 miles of wire, extending east to Boston, south to Washington, and west to Chicago, has been purchased for \$550,000 in Western Union stock at par. The company have also purchased since the close of the fiscal year 10,000 miles of copper wire, which will be erected before January 1 on important trunk routes.

Pneumatic Stone Dressing Machine.

Some time since we illustrated in *The Iron Age* the main features of a pneumatic tool made by the American Pneumatic Tool Company of 844 Washington street, New York. In brief, the tool consisted of a small cylinder, forming the handle, in which worked a piston carrying the cutting tool. The piston was reciprocated with great rapidity by compressed air conveyed to the tool through a flexible pipe. The tool



PNEUMATIC STONE-DRESSER IN OPERATION.

PNEUMATIC STONE DRESSING MACHINE.

On whatever side we look at it compulsory arbitration means the death of industry and the enslavement of labor.

There may be some modification of the general principle developed in the future, but I do not know it now. There should be a protest by the community against it. Few labor organizations indorse it. A few scholars and thinkers are almost the only ones who really indorse it. To adopt it would be to go back to the ages from which we have been divorced. It would be going back to a worse barbarism than we have ever had on this continent. There would be no life, no survival of industry under it.

At the annual meeting of the Western Union Telegraph Company, President Eckert gave some interesting figures, saying: There have been constructed during the year over 1300 miles of new pole line and nearly 22,000 miles of new wire, but lines taken down reduced the net increase of pole line to 367 miles, while the net increase of wire was reduced to 21,591 miles. More than half of this is copper. Since the expiration of the fiscal year the system of the

was compact, durable, positive in its action and was composed of but few parts. It had then been successfully applied to stonecutting (molding, &c.), calking boiler seams and work of similar character. The engravings here presented show another application—namely, the dressing of stone, for which work the tool seems to be well adapted. The tool is shown in operation in the perspective view, while the elevation, Fig. 2, shows the arrangement of the principal parts.

The pneumatic tool B is mounted on a universal joint on the end of the carrier bar C, so that it may be set to cut at any desired angle. Compressed air is led to the tool through the pipe H, the exhaust air passing through the small pipe and serving to blow the chips and dust away from the cutter. The carrier bar C is free to be moved between the guide wheels E, which are mounted in the circular frame, as shown. This frame is held by other wheels or rollers to the circular standard D, up and down which and around which it may be moved. It will thus be seen that the tool B may be set to work at any desired angle; that it may be moved

toward or from the standard, and that it may be operated in any part of a circle the size of which is controlled by the length of the bar C. The frame carrying the bar C is counterbalanced by a weight placed in the standard, and the ropes to which pass over the pulleys G. The raising and lowering are effected by the windlass crank F. The machine is mounted upon a truck, as shown.

These machines are now in use in several granite quarries, the perspective view being from a photograph of a machine at work upon one of the large platforms of the Iowa State soldiers' monument at the granite works of Charles H. More & Co. of Barre and Montpelier, Vt. The machine takes the granite from a rough point, say 1

amply covered by insurance, and the company will repair the damages at once. There will be no interruption to business. Their other sheet mills, at Wilmington, Del., and Rowlandsville, Md., are running on full time.

The Crescent Sheet & Tin Plate Company, Cleveland, Ohio, were incorporated October 5, with a capital of \$200,000, to manufacture, sell and deal in sheet iron and tin plate, with the following directors: H. P. McIntosh, Francis Widlar, N. C. Brewer, E. W. Moore, A. B. Foster, James Paton and J. A. Matthews. At a meeting of the directors the following officers were elected: President, M. P. McIntosh;

were 34,788 locomotive engines in service, of which 24,660 were equipped with air brakes, leaving 7,128 to be equipped. There were 1,273,946 freight cars in use, of which only 271,367 had air brakes, leaving considerably more than 1,000,000 cars to be equipped. The total number of freight and passenger cars supplied with air brakes was 299,041, of which 287,703 had the Westinghouse apparatus, 7133 the New York Company's brake, and 4205 brakes of miscellaneous manufacture.

Granite City.

At the invitation of the Messrs. Niedringhaus about 100 St. Louis business men visited Granite City on Wednesday, the 10th inst., for the purpose of inspecting the improvements made in this city during the past six months. The St. Louis Samping Company's works were first visited. These works cover about 10 acres, and are three stories high. The iron frame work of the steel works which will be operated by this company is already erected, and it is only a question of a few months when they will be entirely completed. The product of these works, consisting of Bessemer and open hearth steel, will be utilized by the company in their various departments. The Continental Wire Company's plant was also visited. This plant was fully described in *The Iron Age*. The American Steel Foundry Company's works were inspected, and the management of this company were congratulated on the progress they have made. The building proper is already completed, and the furnaces are now being built, with the work so far advanced that by November 15 it is expected the first casting will be made. The output will consist of steel castings for railroad use, principally bolster heads. What made this plant additionally attractive was the two large traveling cranes, the Morgan and Yale & Towne, both of which were exhibited by their makers at the World's Columbian Exposition. After viewing the different plants, as above outlined, a banquet was served, at which addresses were made by James M. Carpenter, president of the St. Louis Real Estate Exchange; Judge John H. Terry, Rolla Wells, president of the American Steel Foundry Company; D. R. Wolfe, president of the Continental Wire Company, and others. The managers of this new manufacturing suburb of St. Louis are desirous of opening up correspondence with manufacturers who are disposed to locate their plants in that locality, and exceptionally liberal terms will be made with any who decide to locate there.

The shipyard of the American Steel Barge Company, at West Superior, Wis., resumed operations on the 1st inst. An uncompleted barge is to be finished and negotiations are under way for the construction of another large whaleback, which will furnish winter work to a number of hands.

Experiments have been in progress for some time at Chicago in the use of oil for fuel in running tugboats. The official report by city authorities who supervised the experiments has been awaited with much interest. The report was made last week and is in all respects very favorable to the use of oil as compared with soft coal, even in the matter of cost.

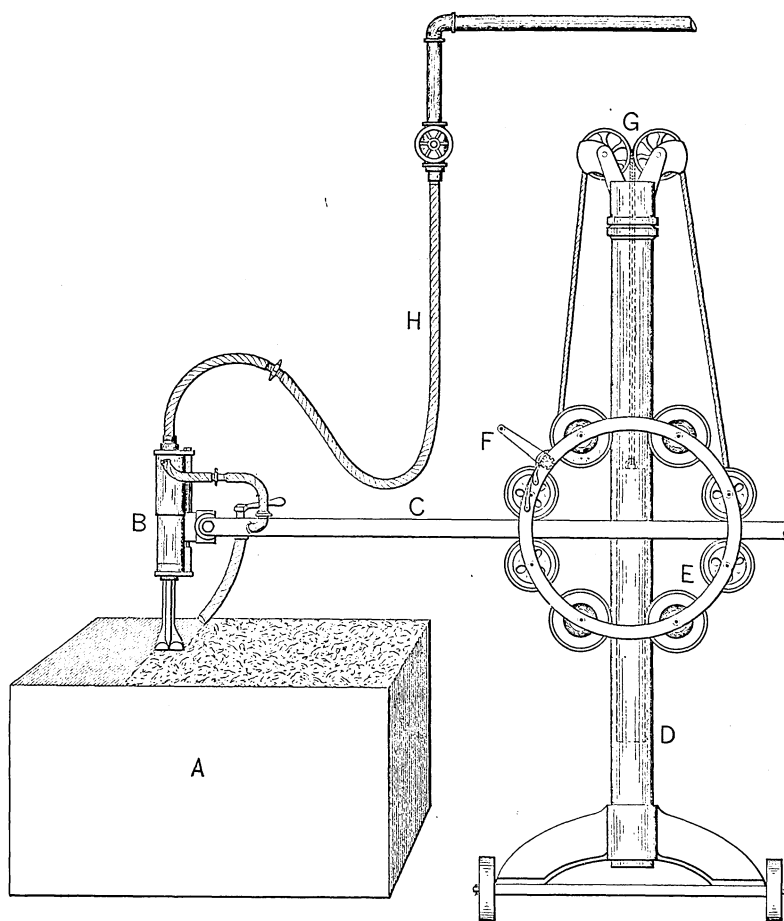


Fig. 2.—Elevation.

PNEUMATIC STONE DRESSING MACHINE.

inch above the level, and reduces it rapidly to the finest 6, 8, 10 or 12 cut work. It is stated that this stone dresser will reduce easily 60 superficial feet in nine hours, thus resulting in a daily saving of \$18, as compared with the prices paid for dressing by hand. There is a further saving in blacksmithing and in the fact that cheaper labor may be employed in pointing and edging.

The rolling mills of the McCullough Iron Company, North East, Md., were damaged by fire on the 9th inst., caused by an explosion of lamps in the engine room. Two of their three sheet mills escaped injury and are working without interruption. The roof over the third mill was burned and the bar mill was destroyed. The forge and other buildings were not harmed. The loss is

vice-president, A. B. Foster; secretary and treasurer, J. A. Matthews, and superintendent, James Paton. The company will begin operations with a four-mill plant, increasing their facilities in accordance with the demands of business. Two hundred and fifty men will be employed, and there will be a daily output of 35 tons of the manufactured product. The company have not yet decided upon a location, the prices asked for land not having been entirely satisfactory, but it is definitely settled that the mills will be erected either in Cleveland or in Lorain.

In explanation of the strength shown recently in the stock of the Westinghouse Air Brake Company of Pittsburgh, it is pointed out that the report of the Interstate Commerce Commissioners for 1893 shows that last year there

A Drafting Room System.

The system adopted and the methods followed throughout any manufacturing establishment are usually largely influenced by those of the drafting department. Promptness, accuracy, orderliness here must, almost perforce, be reflected in the work accomplished in other departments. Hence, improvement in drafting room methods will likely result in a change for the better throughout the entire establishment and the experience of one concern may prove of marked value to another. To this end the following record of the evolution of a certain drafting room is presented.

For some 20 years prior to the conception of the general system which is to be here described, this establishment had been affected with spasms of methodical arrangement, but no broad and clearly defined system had been adopted. Much of this was due to the growth from small beginnings, and the apparent lack in many instances of actual necessity for permanent working drawings. As a natural consequence there existed several "beginnings," one, a set of fine paper tracings, mounted on cards and consecutively numbered; another, sets of accurate and very carefully made cloth tracings, also numbered, but upon an entirely different system from the first, and finally numerous lots or sets of drawings numbered and unnumbered, absolutely lacking regularity in size, variously titled, many not dated; in fact, just such a collection as can be found in any concern where systematic methods have not prevailed.

The opportunity having presented itself to establish a system that should meet the requirements of this particular case, the entire matter was very carefully considered, with the following result: It was determined that every drawing made should at once receive a number; that the drawings should be classified into a few general and broad divisions; that a designating figure should indicate this division and likewise the set of drawers in which this class of drawings should be filed; that a secondary number should indicate the location of the drawing in said set of drawers; that all drawings should be made upon some one of a number of specified standard sizes, and that the card index should be employed in cataloguing these drawings.

Four sizes of sheets for drawings were adopted—viz., 9 x 12 inches, 12 x 18 inches, 18 x 26 inches, 24 x 36 inches, the size of the drawing being indicated by a letter prefixed to the drawing number, thus: A for 9 x 12, B for 12 x 18, and so on. The drawings were filed in special shallow drawers, 50 to each, while the drawers were labeled in this manner: C 10—151 to 200. In practice, the 12 x 18 size has never been used, the 9 x 12 is employed only for sketches and the like, while the 18 x 26 has by the choice of proper scales served with scarcely an exception to accommodate all drawings of regular manufactured goods. The 24 x 36 was designed and is used only for drawings of buildings received from customers where a change in scale would be of inconvenience to them. The standardizing of the sizes made it possible to cut, without waste, any size of standard sheet from either 36-inch or 48-inch stock, whether of paper, tracing cloth or blue print paper.

Had it not been for the exigencies of the case the system of classification

could have been much simplified, but it was not expected that the card index would be developed for some years and therefore a division of drawings according to general subjects was of marked benefit. Under most conditions the size designations would have been sufficient, the drawings of a given size, as A, B, C or D, being numbered and filed consecutively, as A 751 or C 1276. The nature of the business and the large number of machines to which a single drawing might apply forbid any classification according to machines. As it is, however, drawer 3, for instance, indicates engines, drawer 12 covers shop tools, drawer 15 relates only to drawings for work to be installed outside of the works.

No matter how systematically the drawings may be made and arranged, they will fall far short of their true value unless properly indexed. To this end the title of each drawing is carefully recorded upon a card, 3 x 5 inches, which is properly filed in the general index. A single card may not always suffice, for cross references are necessary, and frequently general cross index cards are found to be of great service. Thus in the case of a given size steam engine connecting rod the top of the card would read "Engines," while beneath would be, for instance, "8 x 12 Horizontal Engine, Connecting Rod." To the right would be placed the drawing number, while beneath would be found the date at which it was completed.

By this means all the drawings of a given engine are grouped under its main title.

For shop purposes, and also to insure at all times an accurate list of the drawings required in the construction of a given machine, there was inaugurated a set of "production lists," each giving a complete record of the drawing and pattern numbers, together with the material and number of pieces of each required for one complete machine. This becomes, in point of fact, a finding list, by the use of which one is enabled to turn at once to the proper drawing. The necessity of such a list becomes more and more evident as the number of different drawings of the same title increases. Thus the card index may reveal a dozen different drawings of a cross head for a 6 x 9 horizontal engine. Which is the one to be used in the construction of a given engine cannot by any simple means be indicated in the index, but the production list serves to locate it definitely and at once.

Records of changes in drawings are usually of vital importance, and a series of notes upon a drawing is generally very inconvenient. This difficulty is easily surmounted in this system by changing the number of the drawing whenever such a change is made in the piece represented by it as to prevent the substitution of the new for the old. Previous to the change, however, record blue prints, bearing the original number, are taken and permanently filed, being plainly marked "for record." The drawing once changed takes a new number, and to all intents and purposes becomes a new drawing. Of course such a method can only be followed when all drawings are upon material (tracing paper or cloth) that will allow of their being blue printed, and no progressive concern is supposed to make them otherwise in these days.

The rule that no original drawings should be taken from the drafting room to the shop has been rigorously en-

forced and with most gratifying results. An instance of a drawing being seriously damaged or permanently lost is almost unheard of. As an offset to this regulation blue prints are generously furnished, in order that there may be neither loss of time nor excuse for inaccuracy because of the lack of a blue print.

Because of their standard size sheets of tracing cloth and of drawing paper are cut up in quantity in advance of requirements without waste, while there is for the same reason a marked lack of scraps of blue print paper.

One boy has charge of all this work. All formal orders for blue prints are written, and those given verbally must be followed up by one properly entered. He is held to implicit obedience, and the mistakes so likely to occur in this line are avoided. Not least among his duties is that of putting away daily all drawings that may be taken from the drawers, it being understood that they are not to be returned by the person taking them out.

Saw Filing and Setting Machines.

There has lately been put on the market by P. Prybil of 512 West Forty-first street, New York, a line of saw filing and setting machines, comprising a band saw filing machine, a circular saw filing machine, a band saw setting machine and a circular saw setting machine. The operating parts of the filing machines, Figs. 1 and 2, are mounted upon a rigid iron base, fixed to a bench, or upon an iron column which the manufacturers have designed for the purpose. To this rigid base there is firmly bolted a standard carrying a shaft, upon which are placed the loose and tight driving pulleys and a crank disk. This crank disk operates a connecting rod and cross head, which reciprocates in a guide way. No lost motion or irregularity of movement is thus permitted.

A swinging frame carrying the file is hinged upon the cross head and is given a swinging movement at right angles to the motion of the saw by means of a flat spring fastened upon the connecting rod and acting in unison therewith. The center of the crank disk is so much higher than the center of the cross head as to cause the connecting rod to act in a direct line upon the file when making its forward stroke. On the backward stroke the file is lifted by the connecting rod acting upon the swinging frame. It will thus be seen that the peculiar feature of the band and circular saw filing machines is the motion of the file. It does not fall down straight, but swings in an arc. Thus the teeth of the saw can be filed "under the hook" or "square across," as is desired.

There is another improvement which aids in properly filing a saw. On the periphery of the crank disk there is a cam which bears upon a lever at the right moment and operates the jaws of the vise through which the saw passes—that is, when the file is on its return stroke the vise jaws open and allow a pawl to push the saw along so that the next tooth is placed in the right position; but before the file is ready to begin its work the jaws close and hold the saw firmly. No twist of the saw is possible. The pawl spoken of is actuated by a cam on the rim of the tight pulley, as plainly shown in the cut.

The operation of the machine is as follows: The crank disk is rotated in a direction opposite to the hands of a

watch as looked at from the crank pin side. The connecting rod is swung down and with it the flat spring which plays upon the swinging frame; the file is thus moved forward and downward at the same time. No rigid pressure is brought to bear upon the saw, but if some of the teeth are high the file "gives." In fact the whole movement greatly resembles that of the human hand. When the file lifts, the jaws open, the pawl places the next tooth, the jaws close and the file is ready again for its forward stroke. Over 100 teeth per minute are thus accurately filed.

that narrow or wide saws from $\frac{1}{8}$ inch to 2 inches are accommodated. Thick or thin saws are admitted. Different sizes of files may be used, but those of uniform thickness are preferred, though taper or swelled files do very fair work. There is a great saving of files, besides the saws are filed to the same width all around, and each tooth does its proper share of the work.

The circular saw filing machine, Fig. 2, contains the points enumerated above, with also special features for the rapid adjustment of circular saws. The stud upon which the saws are fastened is

ards which carry the shaft upon which is fastened a peculiar cam shaped sleeve operating a lever to which are connected the two steel setting fingers.

With every revolution of the shaft two teeth are set, one to the right and one to the left. The teeth are not struck a solid blow, but are bent to one side. The vise opens and closes between the intervals of setting, so that the pawl easily shifts the saw, but clamps it tightly between the jaws when the setting operation takes place.

The movement of the pawl allows teeth to be set properly even if they

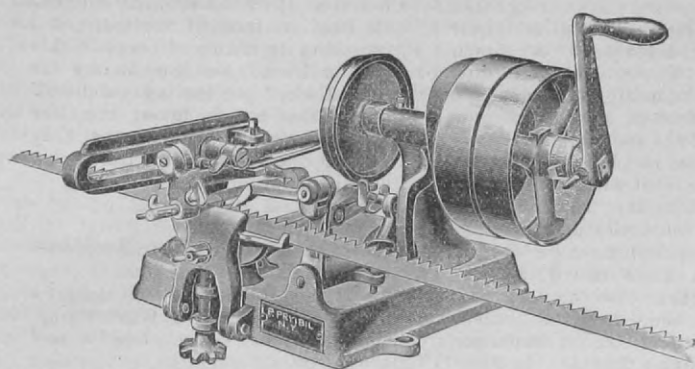


Fig. 1 - Band Saw Filing Machine.

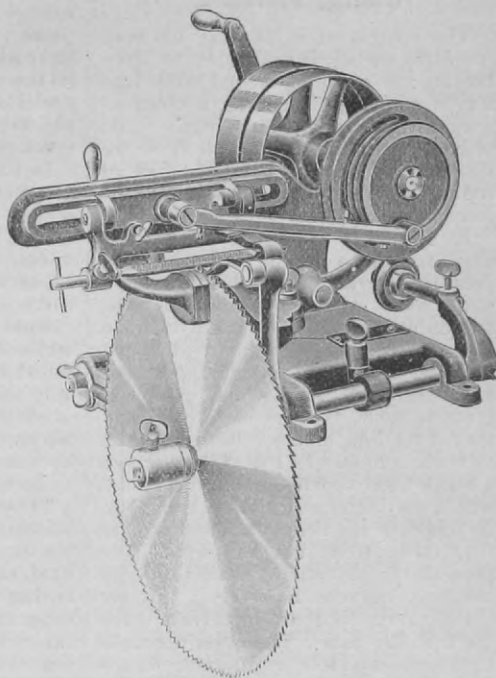


Fig. 2.-Circular Saw Filing Machine.

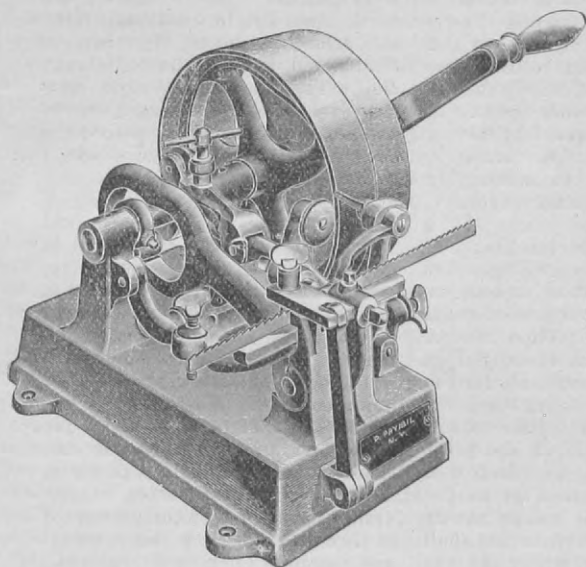


Fig. 3.-Band Saw Setting Machine.

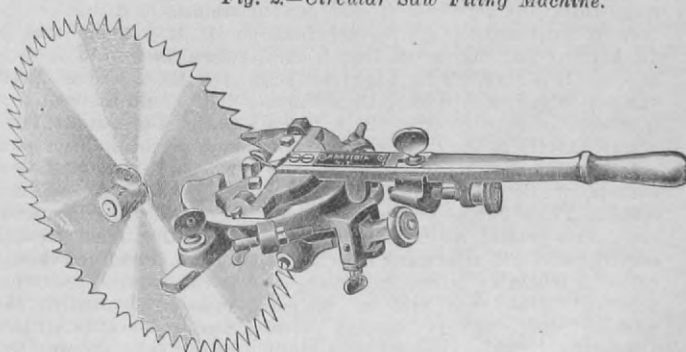


Fig. 4.-Circular Saw Setting Machine.

SAW FILING AND SETTING MACHINES.

The different essential parts have all the necessary adjustments. For instance, the spring which throws the file down can be made to give either a soft or heavy pressure; the swinging frame may be adjusted so as to file a deep or shallow tooth.

The pawl can be set so as to operate upon fine or coarse toothed saws, and will bring the teeth forward into the desired position even should the teeth be unequally spaced point to point. If so desired, the pawl is regulated so as to file the teeth exactly equidistant, so that new or old saws are operated upon indifferently. Teeth as fine as $\frac{1}{8}$ inch from point to point or as coarse as 1 inch from point to point are filed. Again the vise may be made to grip the saw, either tightly or loosely, and has a frame upon which the saw rests, so

provided with a taper sleeve, fitting saw holes from $\frac{3}{4}$ to $1\frac{1}{2}$ inches. So simple is this arrangement that saws can be placed in position and taken out in less than a minute.

Saws having so called straight teeth or teeth for hardwood and cross cutting can also be filed by moving the lever to which the stud is fastened to the left, bringing the saw cut of central position. When this is done the relation of the saw to the file is the same as if the file had the ordinary up and down movements. With this machine, as with the band saw filing machine, 100 teeth per minute are filed.

To accompany these two machines the band saw and circular saw setting machines have been devised. The first, Fig. 3, is very compact, as the cut shows. The base is cast with the stand-

should be uneven distances apart. Saws $\frac{1}{8}$ to 2 inches wide with teeth $\frac{1}{8}$ to 1 inch point to point can be set. The movement of this machine is very rapid; about 125 teeth per minute are set.

The circular saw setting machine, Fig. 4, is very simple in operation, it being adapted for working by hand power only. Saw teeth set on this machine are bent, not hammered or swaged. The handle shown is pivoted so that the handle swings in an arc to the right and to the left. Each tooth passes between two steel jaws, which are adjustable, giving a greater or less set. As the hand lever is operated a cam shaped piece fastened rigidly to the handle operates upon the small roller below, which throws the saw forward a tooth placing it in exactly the right position for the steel jaws to act upon.

The stud to which the saws are fastened is movable backward and forward, so that saws from 6 inches in diameter and upward are taken in and teeth ranging from $\frac{1}{2}$ to $1\frac{1}{2}$ point to point are easily set. The machine is accurately adjusted to set any tooth, even if they are improperly spaced.

Press Working of Sheet Metals.—IX.

BY OBERLIN SMITH.

Coining Processes.

The process of coining, as has been indicated earlier, is analogous to drop forging; or pumping melted metal into a type mold; or squeezing a piece of soap or clay in the palm of one's hand; or molding a pat of butter. In it we see illustrated the principle of the flow of solids even more vividly than in the drawing process.

In Fig. 134 is shown, in vertical axial section, a pair of ordinary drop press dies, arranged for drop forging a small hand wheel, as shown in axial section in Fig. 136 and in top view in Fig. 137. It is possible to do such work as this cold, where copper, lead and other soft metals are used. In practice such dies are more often employed for iron or steel, heated almost to a white heat. In Fig. 135 is shown a blank from which the wheel is made, which may be of any appropriate form. In this case it is simply a round punching, made from flat bar iron. The process is, of course, simply one of molding, the die *L* being rigidly secured to the bed of the press and the die *U* to the ram. The latter descends from a considerable height, and with a force far greater than is usually employed in sheet metal work. A distinguishing characteristic of such products is the beautifully irregular little fin, surrounding the work like a halo at *a a*. It is true this fin might not occur, but it generally does. Its absence is attainable only by the blank being placed exactly in the right position, remaining there during the blow, and containing exactly the right amount of metal. These fins, as before intimated, are always present in some degree, but are trimmed off afterward in what is called a trimming press, in which are mounted dies that are, of course, nothing but ordinary cutting dies. Obviously, by this process such articles only can be made as will deliver freely from the dies, by reason of having considerable taper and no high vertical walls.

The process of coining, as employed for manufacturing medals and metallic money, embodies the same general principles as drop forging work, but is carried out very differently in detail. Furthermore, the metals used are generally worked cold, and there is much more uniformity in the general design of the product than in the drop forging art, whose products embrace almost every conceivable kind of article adapted to the processes employed.

In Fig. 138 are shown, in vertical axial section, a pair of coining dies, *U* and *L*, together with their collar *C*, such as are used in the mints of all the principal civilized nations of the earth for stamping the coins of the realm, from so-called "planchets" or milled blanks, as shown in axial section in Fig. 142. These dies are shown in open position, ready for the planchet to be fed into them by sliding it over the

face of the collar and allowing it to drop into the same and over the lower die. In Fig. 139 the same dies are shown in closed position, when giving pressure to the embryo coin. In Fig. 140 they are shown when the upper die has risen out of the way and when the lower die has risen in its collar to eject the coin; or, as is often the case with an alternative device, when the collar has descended for the same purpose, the lower die remaining stationary.

In Fig. 141 is shown, in edge view, a blank as punched by ordinary round cutting dies from a strip of metal of the proper thickness; and in Fig. 144 an enlarged partial section of the same appears. At *a b* are shown the characteristic rounding on one side and burring on the other, incident to all punching operations. These, however, do not signify, as the milling machine kindly takes care of them.

In Fig. 142 is shown in section as before mentioned and in Fig. 146 in partial section a planchet which has been made from a blank by the "milling process" so called. This consists of rolling the edges in a special machine, the radial compression thus obtained upsetting or thickening them into the form shown, while at the same time the corners are rolled down to a rounded shape, preferably more like *c* than *d*. In Fig. 143 is shown the face of a finished medal which has received upon both sides at once reversed impressions from the respective upper and lower dies employed.

In some cases a coin or medal is reeded or fluted upon the edges, as is the case with our American silver and gold coins, the so called reeding consisting of a number of fine teeth, or cogs, running parallel with the axis of the coin. These are formed by fluting the internal surface of the collar *c*, which, by the way, is made very slightly conical, to facilitate easy delivery.

It is evident that in this kind of work, as well as in drop forging, there is a tendency to produce unwelcome fins, should there be a surplus of metal to the slightest degree. These fins of course tend to form as at *e* and *f*, Fig. 145, in the only place available for the metal to escape, which is in the joints between the dies and collar. Manifestly they must be avoided, and great care is therefore taken, for this as well as for financial reasons, that the weight and consequently the approximate mass of metal in all the planchets shall be uniform, at least to within a very small limit of error. Even with this accuracy of bulk there would sometimes be minute fins, especially as the dies cannot be depended upon to always come exactly the right distance apart, were an attempt made to produce perfectly sharp corners at *c* and *d*. For this reason, as well as for convenience and beauty in the coin, these corners are rounded, an attempt being made to leave them of nearly as great a radius of curvature as was given to them by the milling process. This, of course, can only be done by not pressing the planchet hard enough in the middle to make the edge flow out violently and force itself into the interstices of the mold, as in Fig. 145. Fortunately, with the metals ordinarily used, this can be done successfully, and yet a sufficiently deep, sharp, cameo impression can be obtained upon each face of the coin.

Within a short time past, and since the production of aluminum has been so wonderfully cheapened, it has become fashionable to coin this metal into

medals of all imaginable designs and degrees of beauty and ugliness. Some of the makers of these have attempted an excessively deep cameo effect. The metal, however, has proved itself too prone to flow wheresoever it listeth, with the practical result of a finned edge like Fig. 145, the metal near the periphery not proving itself to be a sufficiently strong hoop to hold in against the radial flow started by the central expanding forces. The makers, who attempted but a small production, dressed the obnoxious fins off in a lathe, which, of course, was a slow and wasteful process. In any case, these difficulties were brought to the attention of the writer, who suggested the use of a planchet made thinner around its edge, instead of thicker, and also considerably tapered off, as in Fig. 147. Such a shape is easily made in a pair of special dies after cutting the blank, or in the sheet before cutting the same by compressing dies set in a gang with the cutting die, so as to produce the blanks at one operation.

This form of planchet proved successful, as the surplus flow from the center was, by the time the impressions were made, none too great to properly fill the edges of the mold, by which term I refer to the group formed by the closed dies and collar, closed as in Fig. 139.

In Fig. 148 is shown a pair of dies and a collar, such as is used for making the ordinary medicinal tablets, or disk shaped pills, shown in Fig. 149. These work precisely upon the same principle as do the dies in a coining press, and are sometimes made of other shapes than round, such as square, triangular, &c. The material in this case is usually a dry powder which adheres by compression. Any fins that may occur are so fragile as to rub off in handling, and are not noticed.

Special Machines.

In addition to the thousands, if not millions, of members composing the army of presses in active service, an army which is constantly mustering in new recruits for newly invented purposes, to an extent almost inconceivable to the past generation, there are in use a number of modifications and amplifications of the power press proper. These may, in general, be denominated automatic metal pressing machines, and they are of almost every conceivable design and degree of complexity. Many of them are hidden in their own lairs, never coming forth in the light of public gaze. Others again can be seen in metal factories of all sorts—in the domains of pin making, hook and eye making, button making, &c.

FEEDING MATERIAL.

The subject in general of feeding or supplying the material to presses may well occupy a few of my closing paragraphs. The primitive, and by far the most usual, method of feeding a sheet or bar of metal to a press is by hand, the operator's muscles sometimes being guided and assisted by certain fixed gauges, as heretofore mentioned, although it is often the case that he depends upon his eye or hand alone.

Automatic feeding is mostly applicable to very long sheets or bars, especially to those which are thin enough to be wound upon a reel. In this case an operator can attend to a number of presses at once, only replacing the rolls of material as they are exhausted. For such work a pair of feed rolls, operating after the same manner as a clothes wringer, is usually employed, or some

times two pairs, working in time with each other, one on each side of the dies. This double arrangement is in order that no unfed places shall occur at the ends of the sheet. The feed rolls mentioned have, of course, an intermittent motion, pushing or pulling the work forward while the dies are out of contact and stopping while the work is being done.

Another popular device is known as a "reel feed." This is often used for thin metals where a number of pieces are to be cut from the sheet at once, while the scrap remains strong enough to hold itself together after being per-

gripper and unclamped, the grippers meanwhile being returned to their original position ready to repeat the operation *ad libitum*. Such a feed is often used for sheets of cardboard in cutting playing cards, either singly or in gangs. It is especially useful for this purpose, where great accuracy is required and where no finger gauge arrangement can be used against the edge of the paper itself, on account of its inherent weakness. The same remarks will sometimes apply to certain thin and fragile metallic work.

Various automatic devices are in use for feeding partly made articles to dies

does no harm. Each cup is brought in succession under the deepening punch, the dial stopping for a sufficient length of time for it to be pushed down through the die and for the punch to be returned above the upper plane of the dial, which then revolves through another stage of its progress, while the punch goes still further upward and returns part of the way down.

In other cases such work as this is performed by what is known as a "friction dial," whereon a number of pieces of work are stood up together in an irregular group alongside of each other, at the large end or opening of a curved wedge shaped recess, whose walls are stationary and whose bottom is the flat continuously moving horizontal disk or dial. The question as to which of the pieces of work shall get in first is somewhat a matter of chance, as they are simply all hustled forward miscellaneously. The one who happens to be ahead is pushed into the gate first, which gate, in the case of the machine in question, is a definite opening leading to a space above the lower die. When it is pushed downward, sufficiently operated upon and left beneath the die, then the next one is, by the same frictional action, pushed into its place.

Power Required.

The horse-power required to drive a press is usually quite small in comparison with that absorbed by many other machines of about the same general size. This is because the speeds are comparatively slow and the strokes, which do the hard work, are intermittent. Again, we have in literature few, if any, definite data based upon dynamometrical tests of actual work.

An approximate estimate of the power that a mediumly tight driving belt of a power press can supply may be made by the old rule of multiplying the diameter of the driven pulley (which oftentimes is the fly wheel also) by its width, both in inches and by its revolutions per minute, dividing the product by 4000, the quotient from which will be the horse power. Such result may be discounted quite freely by guess—say from 25 to 75 per cent. This is to allow for the halcyon moments of waste time, so to speak, between the down strokes of the ram, when the belt is doing almost nothing except, indeed, at certain times to restore the depreciated speed of the heavy fly wheel that is (or ought to be) present in every such machine, in order that a part of the power may be freely stored therein for each critical time of need. The discount referred to will be greater in instances where the main shaft is stopped after each stroke by its clutch—because in such case the ram will be actually at work during a less proportion of its total time than with a continuously running shaft. The observer must judge in each particular case as to how much of the time actual work is being done in overcoming friction or otherwise. Of course much better than all this would be the use of a good recording dynamometer (could a suitable one be obtained), from whose records the power used could be averaged.

[THE END.]

The Lake Shore Electric Railway Company was incorporated at Springfield, Ill., last week with a capital stock of \$10,000,000. The new line will run from Chicago to Milwaukee and will be equipped with the latest and best electrical machinery.

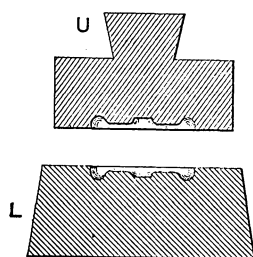


Fig. 134.

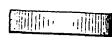


Fig. 135.



Fig. 136.

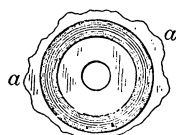


Fig. 137.

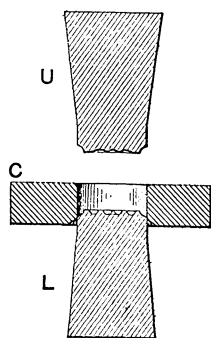


Fig. 138.

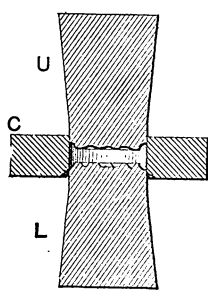


Fig. 139.

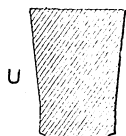


Fig. 140.



Fig. 141.



Fig. 142.



Fig. 143.

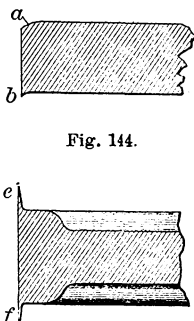


Fig. 144.

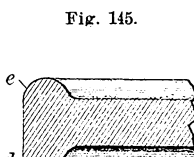


Fig. 145.

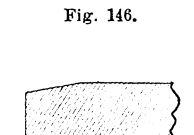


Fig. 146.

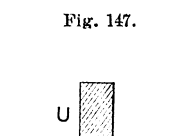


Fig. 147.

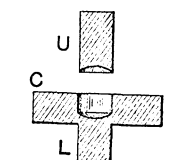


Fig. 148.



Fig. 149.

PRESS WORKING OF SHEET METALS.

forated. This scrap is wound upon a reel at one side of the machine as the uncut metal is unwound from another reel upon the other side. The spacing of the feed is in this case performed by a finger gauge which automatically enters one or more of the cut perforations, making them do their own gauging. The pulling reel attempts a slight excess of motion, the pull yielding when the fixed distance has been moved through by means of a friction slip arrangement. The supplying reel is, of course, controlled by a brake against too rapidly delivering.

Another form of feed is what may be called step-by-step, where the sheet of metal is intermittently fed by being successively gripped, pushed forward, clamped, held in place, let go of by the

whose functions are the performing of secondary or tertiary operations, &c. These are sometimes reciprocating, but usually rotary, the most common form being an intermittently revolving wheel which, with its appurtenances, is commonly known as a dial feed. This is much used in redrawing cartridges, as, for instance, where the cups made in the first operation are placed by hand into recesses in a horizontal dial wheel revolving upon a vertical axis, the machine running continuously at a speed consistent with thus placing in the articles by hand. There is plenty of room at the front of this dial, which is several inches in diameter, for the operator to vary somewhat from an automaton and yet get a cup in every hole. Should one occasionally be missed, it of course

The Output of Steel in Great Britain in the First Half of 1894.

A.—Bessemer Steel Ingots.

The British Iron Trade Association has ascertained that the production of Bessemer steel in Great Britain for the first half of 1894 amounted to 810,392 tons, as compared with 784,712 tons in the first half of 1893, showing an increase of 25,680 tons. This is the first increase that has taken place for the last two years. The output of steel in the first half of 1893 was, however, less than the output in the first half of 1893, and amounted to only 784,712 tons.

The Northeast Coast has once again become the principal-producing district for Bessemer steel. In 1892 the output in that district, owing largely to the strike of coal miners in the county of Durham, which seriously interfered with the conditions of production, was only 83,530 tons, as compared with an output of 216,329 tons in South Wales, which was thus placed at the head, the other districts being far below. In 1893 Wales still retained the lead with a production of 209,909 tons, as compared with 172,823 in the Cleveland district; and now we have the Cleveland district topping the southern half of the principality with an output of 202,283 tons, against an output in Wales of only 181,839 tons. In reference to the other producing districts, the principal features appear to have been an advance from 100,117 tons in 1893 to 132,760 tons in the case of Sheffield and Leeds, which, however, is again due to the suspension of operations entailed in 1893 by labor troubles, and a decline in the case of Lancashire and Cheshire, West Cumberland being fairly stationary, and the other districts showing a continuance of the decline which was apparent in the first half of last year. The details of output for each of the districts or groups are appended:

I.—Statement Showing the Production of Bessemer Steel Ingots in the First Half of 1894, 1893 and 1892.

Districts.	1894. Tons.	1893. Tons.	1892. Tons.
South Wales.....	181,839	209,909	216,329
Northeast coast.....	202,283	172,823	83,530
Sheffield, &c.....	132,760	100,117	121,111
West Cumberland.....	158,330	153,174	100,000
Lancashire, Cheshire, &c.....	104,532	118,378	81,157
Staffordshire, Scot- land, &c.....	30,048	27,311	47,659
Totals.....	810,392	784,712	649,816

The quantities of acid and basic steel produced in the several districts are shown in Table II, from which it will be seen that there has been a material increase of output of basic steel in 1894:

II.—Statement Showing the Production of Bessemer Steel Ingots in the Several Districts in the First Half of 1894 and 1893.

Districts.	First half of 1894.		First half of 1893.	
	Acid.	Basic.	Acid.	Basic.
	Tons.	Tons.	Tons.	Tons.
South Wales.....	181,839	.....	209,909	.....
Northeast Coast.....	73,141	129,142	95,136	77,678
Sheffield.....	107,214	25,746	77,177	22,949
West Cumberland.....	158,930	.....	156,174	.....
Lancashire and Cheshire.....	104,532	.....	118,378	.....
Staffordshire, Scotland, &c.....	6,000	24,048	.....	27,311
Totals.....	631,656	178,736	656,774	127,938

B.—Bessemer Rails.

The total production of Bessemer steel rails for the first half of 1894 amounted to 315,336 tons, as compared with 317,395 tons in the first half of 1893 and 211,884 tons in the first half of 1892. It is clear, therefore, that there has not been any increase on 1892, although there is an advance of considerable amount from the low water mark of 1893. The general conditions of the rail trade, however, remain extremely unsatisfactory. The majority of the works are very partially employed, while several of them in South Wales and in Cleveland have been closed entirely. The details are appended:

III.—Statement Showing the Production of Bessemer Steel Rails in the First Half of 1894, 1893 and 1892.

Districts.	1894. Tons.	1893. Tons.	1892. Tons.
South Wales.....	59,367	59,078	60,634
Northeast coast.....	80,609	83,839	36,346
Sheffield, &c.....	15,542	11,262	12,995
West Cumberland.....	91,082	92,678	60,000
Lancashire and Cheshire.....	68,736	70,538	41,909
Totals.....	315,336	317,395	211,884

C.—Other Descriptions.

One of the most marked features of the Bessemer steel industry, within recent years, has been the increase of the applications of that metal for other purposes than rail making, and the relative decline of the steel rail manufacture. It appears that the total output of finished materials of all kinds for the first half of 1893 and 1894 was as under:

Description.	First half of the year.	
	1894. Tons.	1893. Tons.
Rails.....	315,336	317,395
Plates and angles.....	31,907	43,994
Bars, tees, &c.....	141,824	162,108
Sleepers.....	27,276	14,836
Blooms and billets.....	132,462	117,114
Castings.....	1,982	1,168
Tires, &c.....	7,971	8,711
Totals.....	659,758	665,324

It should be understood that the above figures are only approximately exact, inasmuch as some manufacturers do not appear to have very carefully distinguished between one description and another in dealing with the minor figures; but nevertheless the general results are probably near enough for all practical purposes, and it will be seen that the returns for 1894 leave only 151,000 tons unaccounted for, which, if we assume the average loss in conversion and wasters to be 12 per cent., would bring the figures for manufactured products within 6 per cent. of the total production of ingots for the half year.

It will further be observed that of the production of finished Bessemer steel in the first half of 1894, considerably more than one-half took the form of other descriptions than rails, for any deficiency in the details occurs in other descriptions, and not in rails, of which practically full returns have been procured. This is a very different condition of things to that which existed 10 or 12 years ago, when Bessemer steel was almost wholly employed to produce railway material. If we go back, for example, to 1882, we find that the output of Bessemer ingots was 1,673,000 tons, and the output of Bessemer rails was 1,235,000 tons, and if from the remainder of 438,000 we deduct the loss in conversion and wasters, we shall find that the difference to be made up in other productions than rails was very small indeed, so small that it was not thought worth while specially tabulating them.

Peoria Rolling Mill Failure.

The Peoria Steel & Iron Company, at Peoria, Ill., passed into the hands of a receiver on the 8th inst., at the request of J. B. Greenhut, the president of the Distilling & Cattle Feeders' Company, who own a majority of the stock. His son, B. J. Greenhut, secretary and treasurer, is named receiver, under bond of \$20,000. George J. Gibson, formerly secretary of the Whisky Trust, is the president of the company.

The Peoria Rolling Mill has had a very checkered career. It was started several years ago by Dr. R. C. Flower, a well-known patent medicine man, with a great flourish of trumpets, but it was several years before it amounted to anything. Mr. Flower secured a large amount of lands, particularly coal lands, in the vicinity of Reed City, and was going to have the biggest rolling mill in the country. Peorians were induced to subscribe \$50,000 worth of stock in the new industry, and some old machinery was purchased in Boston, with the intention of removal to Peoria. Before these plans were carried into effect, however, Dr. Flower changed his plans and returned to the East.

The building, a big brick structure, had been completed, and there it stood for a long time, the laughing stock of many and the great regret of many others. Messrs. Gibson, Greenhut and others had by this time organized the Peoria Steel & Iron Company, and the rolling mill property was purchased. They placed the Boston machinery in it and commenced business, bar and hoop iron being their specialties. The Champion Nut Lock & Bolt Works were moved to the rolling mill and placed in one end of the building.

For a time the Peoria Steel & Iron Company prospered. Two hundred hands were given employment, and a large amount of iron was turned out. The business was for a time so satisfactory that new machinery and appliances were added last year. The money was borrowed, and it has never been paid back. Then came the general business depression and the rolling mill was affected. Men were laid off, and the mill shut down altogether. Finally it started up on a smaller scale, and then for a time operated more extensively, but the general condition of business was still adverse and at last the company have had to succumb.

The indebtedness of the corporation as stated in the application for a receiver is as follows:

Due to J. B. Greenhut.....	\$64,743.67
Due G. J. Gibson.....	59,000.00
Due to Merchants' National Bank.....	45,107.80
Due to German National Bank.....	17,713.90
Due divers other creditors.....	16,071.34
Total.....	\$202,636.73

The assets include the plant and property, upon which no estimate is given; the material on hand, amounting to \$22,743.96; bills receivable, the larger part of which are entirely worthless, \$6520.85.

The application states that there is danger of having to prosecute their claims and there is danger in case of a contest of a depreciation in the value of the assets, therefore it is prayed that the Peoria Steel & Iron Company be made a party defendant to the proceedings and the court may appoint B. J. Greenhut, or any other reliable person, as receiver of the property, with full power and authority to take possession at once; that claims be paid and balance divided pro rata to the stockholders;

that the business be wound up and the charter annulled as soon as possible.

The future of the property is not known. The plant is entirely too valuable to long stand idle. Mr. Greenhut asks that its affairs be wound up and the charter annulled. This may be done, but if it is some other company will probably assume control. In the mean time the mill will probably be operated under the direction of the receiver, B. J. Greenhut.

THE WEEK.

P. D. Armour has been experimenting on the economy of using wheat as food for hogs. Feeding 18 pigs solely with 1650 pounds of crushed wheat, they showed in two weeks 525 pounds gain, which, at 5 cents per pound for hogs, made \$26.25 increased value, or a little over 95 cents per bushel of wheat, against 53 cents, the market value of the grain at that time.

An important deal in valuable copper lands was consummated a few days ago in Cleveland, Ohio, when a syndicate of that city purchased 4080 acres in Ontonagon County, Mich., in the Calumet and Hecla belt of copper mines. An extensive plant will, it is said, be equipped immediately and the mining of copper will be pushed. The company have incorporated under the title of the Cleveland Mining & Developing Company, of which the officers are: President, William Noville; secretary, Charles W. Voth; treasurer, Charles F. Uhl.

The heavy withdrawals of September caused a decrease of nearly \$10,000,000 in the value of goods left in the bonded warehouses on the last day of that month as compared with the figures for August 31.

On October 12 wheat scored a new record, December being sold in the New York market at 56½ cents a bushel, a lower price than it has ever before reached. The market for the cereal is dropping so steadily, owing to the heavy surplus in hand and slack European buying, that 50-cent wheat in the near future is freely prophesied by bears in the trade with considerable show of reason.

Experiments are being made in Germany with a view to lighting fields of military operations by means of electric lamps suspended from captive balloons. These experiments are said to have been attended with considerable success, and the method is to be employed in the army maneuvers. The current is carried to the balloon by one of the three cables that keep it in place, and one lamp illuminates a space large enough to enable a considerable body of men to operate at night almost as easily as in broad daylight.

The magnificent new terminal station of the Pennsylvania Railroad, at Broad street, Philadelphia, is very nearly completed. Workmen are busy day and night in giving the finishing touches to the structure, which when complete will be one of the finest railroad stations in the world.

President Cleveland has appointed a board, consisting of Gen. Thos. L. Casey, Chief of Engineers of the Army; Col. W. F. Craighill, in charge of river and harbor works in Maryland and Virginia; Capt. George Dewey, U. S. Navy; Mendes Cohen of Baltimore, ex-

president of the American Society of Civil Engineers, and J. Alexander Porter, civil engineer, of Savannah, Ga., to select the route of the Chesapeake and Delaware Ship Canal, in compliance with the terms of the last River and Harbor act. The board is instructed to examine and determine, from the surveys heretofore made under the War Department, the most feasible route for the construction of the waterway to connect Chesapeake Bay and the Delaware River, which, in its judgment, should give the greatest facility to commerce and will be best adapted for national defense. The report of the board must be completed in the next four months, as it is to be submitted to Congress at its next session.

In his annual report to the Secretary of the Interior, Governor Hughes of Arizona states that when the irrigation works now in progress in that Territory are completed 1,000,000 acres will be added to its cultivable area.

The Government crop returns for the month of October make cotton show a decline of 3.2 points from the September condition, which was 85.8, as against 82.7 for the present month. The condition was as high as 91.8 in August. The declines in the past two months have been due to rains and wind storms through the cotton belt. Corn shows a slight gain, being 64.2, against 63.4 in September. The returns of yield per acre of wheat indicate a production of about 13.1 bushels, or 1.8 bushels greater than the estimate of a year ago.

A deal was closed in Detroit last week by which natural gas from Canada will be pumped to that city through pipes laid under the Detroit River. Secretary Carlisle has decided that natural gas is not subject to duty under the new tariff.

The "Greater New York" scheme is again receiving great attention. A commission has been chosen for the purpose of pushing a bill through the Legislature for the consolidation of New York City with Brooklyn and the districts. The bill has been drawn up and powerful support is promised. The territory of the Greater New York contemplated by the commissioners includes the following cities and counties:

	Square miles.
New York City.....	38.85
Kings County:	
Brooklyn.....	28.99
Flatbush.....	5.69
Flatlands.....	12.79
Gravesend.....	10.96
New Utrecht.....	7.96
Jamaica Bay.....	11.12
Richmond County:	
Castleton.....	5.18
Middletown.....	6.42
Northfield.....	16.20
Southfield.....	12.71
Westfield.....	16.86
Westchester County:	
Part of Eastchester.....	1.91
Part of Pelham.....	2.83
Westchester.....	16.50
Queens County:	
Flushing.....	29.65
Part of Hempstead.....	17.86
Jamaica.....	33.50
Jamaica Bay.....	14.51
Long Island City.....	7.14
Newtown.....	21.32

A comprehensive investigation into the effect of machinery in labor is now being planned by the Bureau of Labor at Washington. This inquiry was ordered by Congress, and will involve a study of the whole modern industrial system. The results cannot fail to be of great interest both to the employers and the workmen of the country.

An extraordinary suit, arising out of the late troubles of the Cordage Trust, was tried in the Superior Court in New York City on Monday. The action was brought by the confidential bookkeeper of the trust to recover \$20,000 from an outside party, which the latter had promised to pay the bookkeeper for revealing to him all the inside facts concerning the financial standing of the trust for four years and practically to tell all the secrets of the corporation. The bookkeeper had carried out his part of the contract, but not having received the promised reward, brought the present suit. The suit was dismissed, but it has been carried to the Appellate Court.

At the recent convention of the American Bankers' Association the Attorney-General of Maryland made the remarkable and gratifying statement that for 60 years not a single regularly organized bank in that State had closed its doors and failed to pay its creditors dollar for dollar.

Child labor has been abolished in the large Diamond Plate Glass Works, at Elwood, Ind.

The Chief of the Bureau of Statistics, at Washington, reports that the total values of the exports of merchandise from the United States during the month of September, 1894, and during the nine months ended September 30, 1894, as compared with similar exports during the corresponding periods of last year, were as follows:

	1894.	1893.
September.....	\$59,038,863	\$72,026,798
Nine mos. ended Sept. 30.	577,047,022	603,221,873

In September last the exports exceeded the imports by \$8,449,353. In September, 1893, the excess of exports over imports was \$25,726,186. During the nine months ended September 30, 1894, the excess of exports over imports was \$73,517,284, and the excess of imports for the corresponding period of the preceding year was \$22,103,499.

A promoter in California proposes to build an electric railway through the mountains 62 miles to the Yosemite Valley, and by utilizing the water power, furnish electric light and motors for all that region. It is argued that the road could be made to pay from the fact that about 4000 tourists visit the Yosemite every year, paying \$35 each for the stage ride.

An engineering work of considerable importance, which has been commenced lately, is the piercing of two railroad tunnels through the mountain barrier separating France and Spain. The tunnels, which will each be about 5 miles in length, are for the use of two international lines of railway, each having its own separate tunnel. The first of these lines will start from St. Giron in France, having for its objective point the town of Lerida in Spain, while the second will start from Cloron in the Basses Pyrenees and join the main line from Laragassa to Barcelona. A period of ten years is assigned for the completion of the entire scheme.

The Citizens' Gas Company of Knightstown, Ind., while drilling for gas recently at that place, struck an abundant flow of oil at the depth of 1000 feet. A local company has been formed and will drill a number of wells. The oil has been examined by experts at Indianapolis and pronounced to be of superior quality.

Washington News.

(From our Regular Correspondent.)

WASHINGTON, D. C., October 16, 1894.

The *Iron Age* has already given an official description of the general designs of the new torpedo boats 3, 4 and 5, for which bids for construction are ready to be made public. As will be seen, strength and lightness are prominent features in their construction. This will apply more particularly to the machinery, which also has some novel features.

A comparison of the machinery of these torpedo boats with the machinery of the gunboats "Machias" and "Castine," which have practically the same horse-power, shows that the machinery space of the gunboats is 15,340 cubic feet, that of the torpedo boats is 5783 cubic feet; the gunboat machinery weighs 152.817 tons, that of the torpedo boats 60 tons.

Engineer-in-Chief Melville says: "We find, then, that the machinery of the gunboats for the same power occupies 2.65 times as much space and weighs 2.54 times as much as the torpedo boat machinery, also that it takes 171.15 pounds of machinery for 1 horse-power in the gunboats, while it takes only 67.2 pounds for 1 horse-power in the torpedo boats."

The efficient Chief of the Bureau of Steam Engineering has been giving the subject of the machinery of these torpedo boats very earnest study and is confident that they will be as superior to similar boats of other nations as the "Columbia" and "Minneapolis" are superior to their cruisers.

In the American boats 3, 4 and 5 the machinery will consist of two main engines and auxiliaries and two boilers.

The following are the official dimensions and mechanical characteristics prepared by Past Assistant Engineer F. H. Bailey, United States Navy, in charge of the drafting room of the Bureau of Steam Engineering:

"The boilers will be of the coil, sectional or tubulous type, the exact type being not yet adopted. They will be within 26 tons weight, including all the attachments, and will have a heating surface of 5120 and grate surface of 95 square feet. Each boiler will have its own water-tight compartment, as will also each engine. The boilers will be constructed for a working pressure of 250 pounds. The engines, of the triple expansion, condensing type, will be vertical and inverted and will have four cylinders each. The dimensions of the cylinders are: High pressure, 12 inches diameter, intermediate pressure 10½ inches diameter, and each low pressure 22 inches diameter. They will all have a stroke of 16 inches. The high pressure cylinder will be placed aft in the star-board engine, which is also the forward engine, and forward in the port engine, which is also the after engine. The power to be developed by the two engines is 2000 indicated horse-power when running at 412 revolutions. As in all man-of-war machinery, and especially in the case of torpedo boats, the aim has been to develop the required power on the smallest possible weight and space, and with the smallest possible vibration. To bring cylinders close together and thus reduce the area of a couple causing vibration, the high pressure and intermediate pressure will be made in one casting and the two low pressure cylinders in one casting.

"The high pressure and intermediate pressure cranks make an angle of 180° with each other, as do also the two low pressure cranks, and the low pressure cranks will make an angle of 90° with the high pressure and intermediate pressure cylinders. The valves are all of the piston type, there being one for the high pressure cylinder and two for each of the other cylinders. The valves derive their motion from a valve motion shaft, driven by gear from the main shaft. Each engine will have its own condenser with the necessary circulating pump, and air pump. Each air pump will be run from the crank shaft of its engine and the circulating pump will have an independent engine. The inlet and outlet for condensing water of condenser are provided with scoops so that when the boat is in motion water will be forced through the condenser without the use of the circulating pump. The circulating pump is only needed when the boat is at rest. The feed pumps will be independent vertical pumps, there being two main and two for auxiliary purposes. The crank shaft, connecting rods and piston rods will be made hollow, and the rule of making everything as light as possible to do the necessary work is followed throughout. The weight of all machinery including boilers and everything belonging to the engineering department will be not more than 60 tons."

Passed Assistant Engineer Bailey, who succeeds Chief Engineer Towne, now the head of the machinery designing department of the Cramp Ship Yard, at Philadelphia, is a native of New York and entered the navy in 1873. Mr. Bailey is a most accomplished marine engineer. He was selected by Chief Melville on account of his gifts in the line of his profession. He is a worthy successor to the accomplished Towne.

Chief Naval Constructor Hichborn, United States Navy, has practically completed his annual report to the Secretary of the Navy. It is an exceedingly interesting document. That portion relating to work now in hand, which will complete the ships authorized by Congress, is peculiarly important to the iron and steel industries, as it indicates the limit of the Government as a large purchaser in those markets unless the next session of Congress resumes the construction of great ships by the necessary legislation. Even then, however, it will require some months for preparation. The following is an official exhibit compiled for *The Iron Age* showing the estimated date of completion of the following vessels, ready for sea.

At the Navy Yard, New York —
"Maine," dependent upon receipt of turret armor, January 1, 1895; "Puritan," dependent upon receipt of turret and pilot house armor, March 1, 1895; "Terror," dependent upon receipt of sighting hoods, January 1, 1895.

At the Navy Yard, Mare Island —
"Monadnock," June 30, 1895.

At the Navy Yard, Norfolk. — "Amphitrite," dependent upon receipt of ordnance materials, January 1, 1895; "Texas," dependent upon receipt of armor and ordnance materials, June 1, 1895.

Bath Iron Works. — "Katahdin," dependent upon receipt of armor, April 1, 1895.

Wm Cramp & Sons. — "Minneapolis," December 31, 1894; "Indiana," dependent upon receipt of armor, July 1, 1895; "Massachusetts," dependent upon receipt of armor, July 1, 1895; "Iowa,"

dependent upon receipt of armor, October 1, 1896; "Brooklyn," July 1, 1896.

Union Iron Works. — "Oregon," dependent upon receipt of armor, March 1, 1896.

Newport News Shipbuilding & Dry Dock Company. — Gunboat No. 7, March 1, 1896; Gunboat No. 8, March 1, 1896; Gunboat No. 9, March 1, 1896.

Three torpedo boats, July 1, 1896.

Commodore Sampson, Chief, and Professor Akerman of the Ordnance Bureau, United States Navy, who witnessed the test of armor plates at Bethlehem, speak in the highest terms of the methods of business and work of that plant.

The armor which the Bethlehem people are making for the Government is well advanced and will very soon be completed.

There are but 31 more armor plates to be forged. All the rest of their contract engagements have been filled. When these 31 plates are finished they will have no more armor plate work until Congress authorizes more ships of the armored class.

The Crane Iron Company.

Attorney John Sparhawk, Jr., representing a committee of bondholders, has bought in, at public auction, the property of the Crane Iron Company for \$100,000. The committee, which consists of Gordon Monges, chairman; W. S. Pillings, secretary; Robert F. Kennedy, Robert E. Hastings and J. A. Harris, Jr., will proceed at once to reorganize the company. They represent \$448,000 of bonds held by bondholders and \$435,000 held by various banks, which hold the bonds as collateral security for a debt of about \$200,000. The new corporation, the stockholders in which will be the bondholders in the old Crane Iron Company, will be known as the Crane Iron Works. The bonded indebtedness will consist of \$200,000 first mortgage 6 per cent. bonds and \$500,000 second mortgage 5 per cent. cumulative income bonds, secured by mortgages on the corporate franchises and plant at Catsauqua, Pa. The first mortgage bonds will be issued to the creditors of the old company, whose claims aggregate somewhat less than \$200,000 and who hold as collateral security bonds to the amount of \$435,000, these creditors to receive bonds equal in amount to their several claims with interest to the date of settlement. The second mortgage income bonds are to be issued to the bondholders of the old company who have assented to the plan (representing bonds to the amount of less than \$450,000). The capital stock of the new company is limited to \$500,000, and the shares will be issued dollar for dollar to such of the present bondholders as are entitled, by virtue of their assent to the reorganization plan, to receive second mortgage bonds.

Notwithstanding the low price of cotton the general business situation in the South is reported as being in a very healthy condition. Many new industrial enterprises have been organized or are projected. Railroad building has received quite a remarkable impetus, considerable purchases of agricultural and mining lands have recently been made by Northern capitalists, and in all directions the tendency to investments in the South is becoming very marked.

The Iron Age

New York, Thursday, October 18, 1894.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Western Bar Iron Meeting.

A few weeks since an American iron manufacturer was strolling down the street of a manufacturing town in Western England. Seeing a quantity of bar iron being delivered in front of a large establishment, he concluded to interview the proprietor as to its cost. He was courteously received, was told that the iron was Staffordshire bars and was further informed that it had cost £6. 5/, or \$30.25, per gross ton delivered in that town. Returning to this country, he resumed his duties and found his mill billing the same quality of iron at \$22.40, at mill, per gross ton, or \$25.76, delivered to consumers' towns over a considerable portion of the Central West, reaching at that price many places 1000 miles or more from the Atlantic seacoast. Thus he found from his own personal knowledge and experience that consumers in the interior of the United States are being favored with prices considerably lower than those paid by consumers in England. Inasmuch as our prices are ordinarily higher than English prices, considerably higher wages being paid here, this statement shows very forcibly that the Western bar iron trade is sadly out of joint. American prices should hardly be expected to run so far below those prevailing in England. It is asserted that scarcely a bar mill in the West is making cost at present prices. The manager of an establishment which has always done a large business, has a good reputation for the quality of its product and has hitherto been able to run when competing works stood idle, says that in the last fiscal year of his company a surplus of \$150,000 was wiped out and \$50,000 more went with it. Good reasons therefore exist for the effort which is now being made to adopt measures to improve the condition of the bar iron trade.

A meeting of Western manufacturers was held at Indianapolis on the 2d inst. for the purpose of considering the gravity of the situation and formulating some plan for the betterment of prices. Their deliberations have not been made public, but it is known that the tenor of the discussion showed that everybody was apprehensive of the future, and it was freely admitted that unless a change was speedily made more bar iron manufacturers would be driven to the wall. Two Western mills have succumbed within a short time, and their fate is a dismal warning to the survivors. Nothing definite was accomplished at the meet-

ing, however, because a number of important establishments were unrepresented, and it was decided to call another meeting at Cleveland for the 23d inst., in the hope that a representation could be secured there of all the mills west of the Alleghany Mountains. It is expected that at this meeting definite plans will be submitted for the improvement of the trade. Conditions are such that there should be little difficulty in inducing members of the trade to be present. Every mill in the West should be represented.

Up to the present time bar iron manufacturers have been hoping that the general condition of business would improve sufficiently to enable enough of their output to be marketed to give some stability to prices. In this they have been disappointed grievously. Low prices for agricultural products and absolute failures of crops in some sections have compelled farmers to rigidly economize, and therefore agricultural implement makers are pursuing a very conservative course in their preparations for the coming season. They have consequently made smaller purchases of material than usual. As they had grown of late years to be a very important factor in the bar iron market their restriction of production is keenly felt.

The car building trade is another source of disappointment. New rolling stock is badly needed by many railroad companies, their sidings in numerous places being blocked with crippled cars, but the companies have been earning so little for a long time that they have deferred even needed repairs until their traffic should materially improve. The longer such work is deferred the more will it become absolutely essential at some time in the not distant future, but meanwhile the bar mills are receiving comparatively little business from this usually important consuming interest. Miscellaneous manufacturing consumers are taking more iron than earlier in the year, but the gain in this direction will have to be expanded many times to compensate for the loss of consumption on the part of the great interests of the country.

An improvement from purely natural causes being out of the question at present, bar iron manufacturers naturally look to each other for action within the trade, through which, at least, better prices can be realized on the limited tonnage marketed. They believe that notwithstanding the encroachments of steel there is still a large field for the bar iron manufacturer, and that his prices can be advanced much closer to those of steel than at present without much loss of trade. At the same time, however, it is presumable that any improvement in bar iron would carry with it a corresponding improvement in soft steel bars, as they are so closely related; in fact, steel bars being also rolled by most bar iron mills. It is possible that some manufacturers may advocate a close union of the mills and the establish-

ment of a central selling agency in every leading trade center, through which orders would be distributed to the several mills. A uniform price could then be maintained, as there would be no competing sellers. Possibly this scheme might be made to work, but at first blush it seems to be impracticable for obvious reasons. The appointment of a committee to fix a scale of prices to be maintained at every important center is another scheme which would work if there was some way in which to secure its enforcement.

While it may be somewhat doubtful whether the conference will result in the adoption of a broad scheme which will at once and permanently lift prices, yet some changes in trade customs are mooted which are expected to have no little effect on profits. Brokers are held responsible for the frequent demoralization of prices caused by their efforts to secure business merely for the sake of the commission, and an effort is being made to discourage them from further participation in the bar iron trade. A much more radical change, however, is proposed by some manufacturers who would do away with the common practice of cutting to lengths at the mill. They would have all bar iron sold in random lengths just as it comes from the rolls. It is stated with considerable force that the rolling mills now do a very large part of the work which manufacturing consumers should do in their own factories and that it is done at no profit. A nominal schedule of charges for such extra work is in vogue, but, like terminal charges on railroad traffic, it is absorbed in the regular rates, and the profit thus originally expected is lost in the shuffle.

The interests of consumers would appear to be disregarded in the attempt made to raise prices of bar iron. They will, doubtless, view any such attempt as hostile to their interests. But it should be borne in mind that in the first place any advance in prices would have to be quite moderate to be sustained, and in the second place an advance would work harm to no one if each consumer could be assured positively that his competitors were not able to buy any cheaper than himself. They should begrudge no one a decent living profit.

The Future of the Beam Trade.

Since the days of the old beam pool no statistics have been available on the consumption in this country of iron and steel beams. When they were selling, under the pool arrangement, at the range of 2.8 cents to 3.3 cents, the sales and the occasional importations aggregated less than 100,000 gross tons. How much they have grown since, under the *régime* of low prices, it is impossible to state. That the expansion is large there can be no doubt, since one mill alone has been marketing over 10,000 tons per

month for a considerable period this year. It is true that the concern in question has been a very aggressive seller, and that other works East and West have done comparatively little individually. But taking them all together, they have unquestionably taken a goodly quantity.

Good authorities in the beam trade do not take a very sanguine view as to the future, so far as prices are concerned. Like in every leading branch in the industry, the continuance of present values for any prolonged period is not expected. Our mills cannot, even with cheap raw materials, go on selling the common sizes of beams at 1.25 cents to 1.35 cents, delivered in the leading markets. On the other hand, a rise above 1.50 cents to 1.70 cents, delivered, is not believed possible for any length of time because of the enormous reserve capacity. There has not alone been a direct increase during the past few years, an increase which is still going on, but there has also been a change in the conditions which makes the existing capacity available for greater work.

The increase in the capacity, present and prospective, is not due to additions to the list of makers. It is due simply to the fact that many of the older concerns in the business must make up their minds to bring their mills up to date—that is, to remodel them in the direction of greater and faster work—or they must go out of the business entirely. One of the older Eastern mills is now completing a splendid new train which will bring it up to the work of the best.

We have alluded to special circumstances as having made existing plants available for greater tonnage. We refer to the changes in the methods of architectural work. Formerly consumption, and to a certain extent, therefore, production, was limited to a pretty well defined building season. When winter came the erection of large structures practically ceased. Now the structures are run up in our leading cities with little reference to the weather. This means that the demands upon the mills are more evenly distributed during the year than they were, and allows them to produce with moderately steady activity a greater tonnage than they did in the feast and famine days.

The one conspicuous feature in the beam trade promises to be the rapidly expanding consumption. It is well to know that the effect of low prices in inducing an expansion of requirements does not operate as quickly as is generally supposed. But we do believe that, though it be slower, the stimulus of low cost has far more power than it is generally given credit for. Careful observers will note that beams are already finding a use in the better classes of dwellings and in the medium classes of stores. That tendency will develop steadily and will ultimately carry those beam mills which survive to the safe basis of a large tonnage at moderate profits as contrasted with the forced and dangerous returns from an artificially restricted market.

English Versus American Prices for Bridge Material.

A number of years since the English engineering trade was startled by the appearance of American constructors as competitors in the world's markets. A conspicuous instance was the taking of the Hawkesbury bridge in Australia by the Union Bridge Company. The successful competition in such instances was due to superiority of the American designs, which made it possible to produce a cheaper structure of equal carrying capacity. With the exception of the eye bars, the material for such structures was placed with foreign mills.

For some years American bridge builders commanded quite a considerable trade in smaller railroad and highway bridges in the West Indies and in South America. This they took, in spite of using higher priced domestic material, simply because the pin connected structures were used. Of late years foreign bridge builders have, however, copied American designs, and the work coming to this country has been lessened.

The frightful decline in prices of structural material during the past year has, however, changed the aspect of affairs considerably. We are getting down pretty close to the English level. Just what the English level is has been pretty difficult to ascertain because our British contemporaries rarely quote anything but nominal prices. Therefore special value attaches to the following table, which gives the figures quoted to an English firm by English mills on work for a distant market:

English Prices for Bridge Material.

	F.o.b Tyne.	F.o.b Hull.	F.o.b L'pool.
Steel ship plates, $\frac{1}{4}$ inch and over.....	1.09	1.143	1.224
Iron ship plates, $\frac{1}{4}$ inch and over.....	1.062	1.116	1.197
Steel angles, $\frac{1}{4}$ inch and over, from 5 to 11 "united" inch.....	1.082	1.116	1.197
Tees, Z, plain bulbs and bulb angles 10 shillings per ton above angles.....	1.170	1.224	1.305
Bulb tees, £1. per ton above L's.....	1.273	1.333	1.414
Checkered iron plates, $\frac{1}{4}$ inch and over, Diamond pattern.....	1.172	1.224	1.307
Checkered iron plates, $\frac{1}{4}$ inch and over, Oval pattern, 15 shillings over above.....	1.335	1.382	1.470
Checkered steel plates, $\frac{1}{4}$ inch and over, Diamond pattern.....	1.197	1.252	1.333
Note: £1. = \$4.85.			

Now, during the current year steel plates and angles have sold down as low as 1.15 cents to 1.20 cents, delivered Philadelphia or New York, so that they have come down pretty close to the values for English material at Hull and at Liverpool. Of course the English mills make some money at their selling prices, while the American works are probably selling at less than cost at a time of extraordinarily low prices for raw materials and at a period when wages are much below the fair level.

It is not a fact which is likely to cause much rejoicing, but it is a fact

from which some temporary advantage might be drawn, that our prices are so low. Those who have bridge work to offer in different parts of the world should be advised that it is worth their while to sound our markets before placing their orders. It is believed that the American bridge builders have so thoroughly systematized their shop work that they could offer advantages. We are told that not long since the specifications of an English engineer for a structure in South America demanded its erection at the mill, to ascertain whether the work was correctly done. We imagine that few American builders would hesitate to guarantee that such an expensive "trial of fit" would be unnecessary.

American bridge builders are probably able in many cases now to compete very closely with their European rivals. All they need is a good chance, so long as materials remain so cheap.

CORRESPONDENCE.

Coking with Recovery of By-Products.

To the Editor: I note upon my return from Europe an article in your September 6 issue, entitled "Coking with Recovery of By-Products." I note in that article that credit is given me for most of the statistical data accompanying same. I desire to make a correction in this respect. Much of the most valuable data therein published was not collected by me, but by Austin Farrell of Negaunee, Mich. While this data was collected for a common purpose, it is right and proper that Mr. Farrell should receive such credit as may be due. He spent months of time and traveled over the greater part of Germany, Belgium and France collecting, in a most intelligent and comprehensive manner, such data as would be of use to those in this country who have had their attention directed to this subject.

I would be pleased to have this correction made, as an unintentional injustice has been done to a warm friend of mine, and one who has labored earnestly in bringing about an end that we all devoutly wish for—i. e., the adoption in this country of some by-product coking system. I know of no one to-day who has as exhaustively and thoroughly considered the matter in all its bearings as Mr. Farrell. As you are aware, my absence in Europe prevented my reading the proofs which you forwarded to my office. If I had done this, full justice would have been accorded to Mr. Farrell.

Respectfully yours,

JNO. F. WILCOX.

PITTSBURGH, October 6, 1894.

Native Iron.—John Birkinbine of Philadelphia exhibited at the Bridgeport meeting of the American Institute of Mining Engineers specimens of native iron in ore from the vicinity of Anniston. This is one of the very few well authenticated cases of the occurrence of native iron.

The lobster packing business on the North Atlantic Coast has been very poor this year, the supply being unusually small.

OBITUARY.

HORACE PLYNN SMITH.

Horace P. Smith, Eastern agent for Jones & Laughlins, Limited, with offices in the Home Insurance Building, New York, died at his home, 86 North Grove street, East Orange, N. J., on the 13th inst., of a complication of diseases. Deceased was born at Cleveland, Ohio, in 1838, and was, therefore, in his fifty-sixth year. When about 20 years of age he went to Titusville, Pa., and engaged in the hardware business. In 1871 he moved to Pittsburgh and connected himself with William Clark's Son & Co., and he was with this company until the Pittsburgh Bessemer Steel Company were formed. This latter company were afterward absorbed by Carnegie, Phipps & Co., and for about ten years Mr. Smith occupied the position of secretary to the latter concern. He was afterward secretary and treasurer of the Allegheny Bessemer Steel Company from its incorporation, and was practically its founder. Ill health forced him to sever his connection, and in the spring of 1890, having recovered his health, he became the Eastern agent for Jones & Laughlins. Mr. Smith was a man of large acquaintance in the iron and steel trade, by whom he was held in high esteem. The death of Joseph M. Larimer, for 15 years manager of the Chicago branch of Jones & Laughlins, who died on August 24, is still painfully fresh in the minds of those connected with the iron and steel industry. In the death of these two men Jones & Laughlins have suffered a heavy loss, and the iron trade at large has lost two able and worthy representatives.

L. T. DEAN.

The death is announced, at Ironton, Ohio, on October 13, of L. T. Dean, aged 74 years. Mr. Dean was until 1891 vice-president and general manager of the Belfont Iron Works, of which he was a director at the time of his death. He was also a director of the First National Bank of Ironton.

Austin Corbin's old scheme for a tunnel from the terminus of the Long Island Railroad, at Flatbush and Atlantic avenues, Brooklyn, to Jersey City, was revived this week in an application introduced in the Brooklyn Board of Aldermen to authorize the Brooklyn, New York & Jersey City Terminal Company to construct and maintain a tunnel from the shore of the East River to Flatbush and Atlantic avenues, and to build railroad tracks in the tunnel. The matter now rests with the Railroad Committee of the Board. The entire plan embraces further a tunnel under the East River, under New York, at about the line of Liberty street, and under the Hudson River to a point on the Jersey City shore near the Pennsylvania Railroad Depot.

At Chicago, on the 11th inst., the Cornice Workers' Union effected a settlement with their employers and the strike which has been so long kept up was declared off. Mutual concessions were made in the new agreement. The journeymen will continue on the old schedule of wages—35 cents an hour and eight hours for a day's work. The contractors agree to hire none but union men, while the latter agree to work only for members of the contractors' association. The new agreement expires

January 1 instead of September 1, which was the time the old agreement expired.

PERSONAL.

T. W. Siemon, who became assistant treasurer of the Philadelphia Natural Gas Company of Pittsburgh and of the Allegheny Heating Company of Allegheny upon the death of E. G. Pearson, has been promoted to the position of treasurer, in place of John Caldwell, resigned. The appointment as treasurer of the Allegheny Heating Company goes into effect at once, and of the Philadelphia Natural Gas Company on November 1.

A number of changes in the location of Steel Inspectors in the Ordnance Bureau have been announced. Assistant Engineer J. P. Lawrence has been ordered to the Homestead Steel Works, to increase the force of inspectors there.

F. L. Garlinghouse, for a number of years chief engineer for the Pittsburgh Bridge Company, at Pittsburgh, has accepted the position of chief engineer of the structural department of Jones & Laughlins, Limited, on the South Side, Pittsburgh.

H. A. Wheeler, who has been connected with the United States Geological Survey and with the Missouri Geological Survey, has resigned from the Chair of Mining at the Washington University, and will give his entire time to professional work. His headquarters will be in St. Louis. Besides acting as consulting mining engineer he will give particular attention to the clay industry.

Franklin Farrel sailed for Europe last week.

F. F. Hemenway who has been connected for 14 years with the *American Machinist* as associate and as editor has resigned.

Among those who will take part in the lecture course of the Franklin Institute of Philadelphia during the coming winter are H. M. Chance, whose subject will be "The Coal Mine;" Dr. David T. Day, who will speak on the mineral resources of the United States; George F. Kuuz, who will relate some experiences of a trip to the Ural Mountains; Prof. Jos. W. Richards, who will speak on recent progress in electro chemistry; Capt. E. L. Zalinski, who will discuss torpedo artillery; A. E. Hunt, whose topic will be advances in the metallurgy of aluminum, and T. C. Martin, editor of the *Electrical Engineer*, who is to discourse on "Niagara on Tap."

Watkin R. Edwards, for fourteen years superintendent of engineers and machinists at the Edgar Thomson Steel Works, Bessemer, Pa., has resigned his position and on October 15 became master mechanic of the plant of the Ohio Steel Company of Youngstown, Ohio.

What is claimed to be the largest barrette ever turned out at any steel plant in the world is receiving the finishing touches at the Homestead Steel Works, Homestead, Pa. It contains 13 pieces of steel, each 17 inches thick, 145 inches in height and will measure in diameter about 400 inches, or 33 feet, and will weigh about 500 tons. The barrette is for the cruiser "Oregon" and will be shipped some time this month. The Homestead Steel Works are working on another barrette of the same size.

An Aluminum Torpedo Boat.

LONDON, ENGLAND, SEPTEMBER 30.—Yesterday was quite a red-letter day for the great firm of torpedo boat builders. Yarrow & Co., who have lately been engaged in building a new kind of craft for the French Government, always among the first to experiment with new ideas and material. The Frenchmen did not have quite what they wanted in their own country in the way of torpedo craft, although those they have are among the finest in the world, and so they decided to cross the channel and place an order with the builders of the famous 27.6 knot torpedo boat destroyer, the "Hornet." They gave the builders a free hand in carrying out the contract, only specifying general dimensions, price and material. It is in this last that the greatest departure from existing methods has been made. Aluminum was the metal chosen, as lighter boats than those built of steel were required. The class of the boat is that of a second class torpedo boat, and while smaller craft have been made of aluminum, this is believed to have the largest dimensions of any heretofore attempted. She is 60 feet long, 9 feet 3 inches broad, and in a few days could be made ready for action in any part of the world.

The armament of these vessels consists ordinarily of one or two machine guns of the rapid fire pattern, from 1-pounder to 6 pounders, and in addition there are the torpedo launching tubes working on a swivel. They are the sort of craft that seem destined to lead the forlorn hopes in naval battles, whose dozen men will carry their lives in their hands, and it is presumed that they will have had sufficient forethought to have made their wills before they start on their perilous adventures.

Aluminum, we will say, weighs only about one-third as much as steel, but allowing for slightly increased thickness and a small percentage of copper alloy it is practically half the weight—a great saving, however, where weights are now so carefully computed on board ship, for these second-class torpedo boats form part of the outfit of battle ships and armored cruisers, on whose upper deck they rest in cradles, and are hoisted in and out by huge steel cranes, in which there can now be another saving in weight.

The new boat, with all her machinery on board and water in the boilers up to the working level, weighs only 9½ tons, showing a saving of 2 tons as compared with craft of the same dimensions made of steel, this saving over all being, of course, effected solely in the hull, the machinery and boilers being of steel in both cases, although it is hoped soon by the introduction of aluminum quite generally in the engineers' department to make a great saving of weight there. On her trial the new boat made 20.5 knots per hour, or over 23 statute miles. Vessels of this class do not come within 2 knots of this speed as a general rule, a highly important matter to naval sleuths, whose powers of mischief and chances of safety are proportioned to their fleetness. A very noticeable feature in the new boat, while steaming at full speed, was the absence of vibration, thought to be in part due to the metal used, but still more to the correct balancing of her machinery and boilers. Most persons are no doubt aware of the unpleasant tremor that runs through a little craft of this sort driven by engines of 300 horse-power,

working on the triple expansion system at the rate of 580 to 600 revolutions per minute. Commonly they seem to shake everything to pieces, and the passenger feels a sensation somewhat like a succession of electric shocks.

Of course the speed mentioned was obtained by forced draft; with natural draft the result would be somewhat over one-half. The difficulty of getting enough steam for such an amount of power within the limited space available is got over by the use of water tube boilers, now so very popular with us in the United States, and from which such excellent results have been obtained in both small and large craft.

Aluminum is a coming metal for use in maritime affairs and is fitted for innumerable purposes in the arts of war and peace, and is now only prevented from more general use by its high price. Prophecy is often dangerous, but in this case it is quite safe to say that the metal is going to become much cheaper. Electricity is the principal agent in its manufacture, and a large amount of it is already produced in Switzerland, where water power is plentiful. We are about ready to turn the Falls of Niagara to practical use in the generation of electricity, and when that immense plant is in smooth working order the ring, which has its headquarters in Berlin and which keeps the price away up, will probably be broken. A German chemist has recently predicted that aluminum will sell for 5 cents per pound, but the most sanguine do not expect that figure to be reached in this century.

The Working of the Interstate Law.

George B. Roberts, president of the Pennsylvania Railroad, in a recent interview made the following argument in relation to the interstate law:

The Government of the United States having taken away from the railway companies the power to enforce the agreements made between themselves in regard to rates has to that extent assumed the management of the roads. It is therefore the duty of the Government to supplement this legislation by such laws as will enable these properties to be rightly managed for their own safety and the good of the public. As they now are under the operation of the Interstate Commerce law they resemble a ship stripped of its sails, helpless to direct its own course and at the mercy of the waves.

I firmly believe that it is to-day more to the interests of the country to enact laws compelling the railway companies to charge a fair compensation, to be regulated by agreement under proper supervision, than to allow the open and violent competition now prevailing over the great highways of the continent. The railway companies, before the passage of the Interstate Commerce law, made pools, and through them endeavored to regulate their rates. There being no law by which such agreements could be enforced, their observance depended entirely upon good faith. This was not always sufficient, though in general it availed. But this right having been taken away the rates are now subject to the whims of lines in many cases wholly irresponsible.

It seems, therefore, that a thoughtful mind must conclude from the results of the Interstate Commerce law, in the last two or three years especially, when commercial activities have been curtailed, that in the effort of Congress to take away from the transportation in-

terests of the country the means of sustaining fair and reasonable rates, a condition of affairs has been brought about far more disastrous to the general public than could result from any reasonable law that permitted these companies to make proper agreements to prevent destructive competition.

Probably no matter is of more importance to the welfare of our country than the enactment of proper laws for the regulation of the great transportation interests. In fact, I believe this stands hardly second to the tariff problem which has recently claimed so much attention and has agitated so deeply the whole country. The laws which have been enacted have been so hastily prepared and are so crude that the modifications that have been suggested have not received the attention which the interests involved would seem to demand; and it will not be until the public clearly understands that the prosperity of the railroads is vital to the prosperity of the country that we can expect a thoughtful consideration of the question and a proper recognition of the intimate relation between the shipper and transporter. This will be finally brought about, however, and the public and railway corporations will then mutually share in the advantages accruing from such legislation.

The Makers of Agricultural Implements.

A numerously attended meeting of agricultural implement manufacturers was held in Chicago on the 10th and 11th inst. It had been called under the auspices of the National Association of Manufacturers of Agricultural Implements and Vehicles, organized in Chicago April 18 last for the purpose of securing proper national and State legislation, correcting freight discriminations and inequalities, &c. The organization has rapidly grown to large proportions and now includes in its membership nearly all the leading manufacturers of implements and vehicles in this country. The proceedings were of a mixed business and social character. The usual attempt was made by daily newspapers to show that the formation of a trust was contemplated, but it is difficult to see how this could possibly be done in a trade comprising so many diverse interests. The following officers were elected for the coming year: President, A. L. Conger, Akron, Ohio; vice presidents, W. C. Nones, Louisville, Ky.; M. D. Harter, Mansfield, Ohio; E. C. Looy, Kansas City; W. W. Collier, Detroit; Clem Studebaker, South Bend, Ind.; T. M. Osborne, Auburn, N. Y.; E. P. Curtis, Worcester, Mass.; H. M. Kinney, Winona, Minn.; H. A. Cavnah, Canton, Ohio; George W. French, Davenport, Iowa; S. L. Allen, Philadelphia, Pa.; P. A. Myers, Ashland, Ohio. Secretary, O. D. Frary; treasurer, Christopher Hotz, St. Paul, Minn.; Executive Committee, for term of three years, H. C. Staver, chairman; J. W. Stoddard, Charles H. Deere; for term of two years, T. A. Galt, Sterling, Ill.; O. W. Jones, Chicago; W. T. Lewis, Racine, Wis.; for term of one year, F. K. Bull, Racine, Wis.; J. Harley Bradley, Chicago; Jas. E. Deering, Chicago.

The Morewood Company, manufacturers of tin plate at Gas City, Ind., have started up their plant with a full force at the old scale of wages, with the agreement that they get the advantage of any wage reduction at other works.

MANUFACTURING.

Iron and Steel.

The Benwood Iron Works Department of the Wheeling Steel & Iron Company, Wheeling, W. Va., which has been working about half time for some weeks past, is now running full in all departments. During the past week the Bessemer steel department of the Wheeling Steel Works of this concern has made the largest output in any one week in the history of the plant. The Belmont Furnace, at Wheeling, W. Va., and Martin's Ferry Furnace of this concern at Martin's Ferry, Ohio, are both in operation turning out Bessemer iron, which is used in their Bessemer plant.

We are advised that the statement that the La Belle Iron Works, Wheeling, W. Va., would erect a mill for the manufacture of heavy skelp iron and steel is untrue. Some important improvements and additions to their plant are contemplated by the above concern, but the nature of these have not as yet been determined.

The plant of the Beaver Falls Steel Works, Beaver Falls, Pa., manufacturers of cast steel, which has been running single turn since March 1 of this year, was started up on double turn on October 1. The firm report the outlook as fairly good, and hope to run double turn all winter.

The plant of the National Bolt, Nut and Rivet Works, Limited, Reading, Pa., was closed down a few days last week for the purpose of adjusting wages, but there was no general strike. The matter was quietly and satisfactorily settled, and the plant is now in full operation. Some changes were made in piece work prices in some of the departments.

Some time ago mention was made in these columns of the granting of a charter of incorporation to the Monongahela Tin Plate Company of Pittsburgh. Additional information indicates that this concern is closely identified with the Oliver Iron & Steel Company of that city, but at the same time is a distinct organization. Contracts have been let to the Robinson-Rea Mfg. Company of Pittsburgh for the erection of nine hot mills 24 x 32 inches in size. The plant of the concern will be located on the site formerly occupied by the Fifteenth Street Mills of the Oliver Iron & Steel Company, all the buildings having been dismantled with the exception of one plate mill. The engines formerly used to drive the mills of the Oliver Iron & Steel Company will be used to drive the mills of the new concern. It is proposed to engage in the manufacture of tin andterne plate on an extensive scale, and contracts for the necessary additional machinery, such as tinning pots, pickling machines, &c., will likely be let in a short time. H. W. Oliver of the Oliver Iron & Steel Company is understood to be prominently identified with the new venture.

The night turn on the 8-inch mill of the Indiana Iron Company, at Muncie, Ind., recently turned out 39,150 pounds of $\frac{3}{8}$ -inch round iron, which is regarded as a notable achievement.

The creditors of the Lansing Iron & Engine Works, at Lansing, Mich., have taken action requesting O. M. Barnes, holder of the trust mortgage in the sum of \$277,000, to foreclose.

The new tin plate mill at Anderson, Ind., is being built by the National Tin Plate Company. The dimensions of the main building, now under construction, are stated at 87 x 486 feet. Six mills are to be built at once, but the project contemplates 12 in all.

Ground was broken on the 9th inst. for the erection of buildings for the new tin plate mills, at New Lisbon, Ohio. The main building will be 160 x 240 feet. There will also be erected three smaller buildings, each having dimensions of 100 x 160 feet. The establishment will have four sheet mills and a finishing department.

A most unfortunate accident occurred at the South Chicago works of the Illinois Steel Company about 3 o'clock on the morning of the 8th inst. The main steam pipe running through the rail mill exploded, killing three men and wounding or scalding a number of others. The pipe was 18 inches in diameter, and about 4 feet of it blew out, including a joint. The pipe had been examined but a short time before and nothing had been seen to cause even a suspicion of weakness. The accident caused a

suspension of work until Tuesday night, when repairs were completed.

A company has been organized at Ogden, Utah, under the style of the Utah Furnace & Mfg. Company, to build a charcoal blast furnace and pipe foundry. A. Evans, Jr., had taken leases of deposits of specular and brown hematite ores in the vicinity of Ogden and at Willard, Utah, which he has transferred to the Utah Furnace & Mfg. Company. The furnace will be served by a plant of 35 to 50 cord charcoal kilns, to be built at the furnace site. A working company has been formed to operate the plant when completed, on a royalty.

It is announced that the Cambria Iron Company of Johnstown, Pa., will erect a plant for the recovery of by-products in coke manufacture by the Otto-Hoffman process.

The Tudor Iron Works, St. Louis, Mo., have issued the following circular to the trade: "On account of the exaggerated reports of the fire at our works on the 9th, I am pleased to advise you that the fire was confined to the puddle mill and machine shop, and the balance of our works are running as usual, so that there will be no interruption in filling our orders. The spike and splice mills are untouched. We have so many different mills, and duplicate rolls and machines, that a fire of this character has little or no effect on our output. We always carry a good stock of muck bar, and expect to have the puddle mill rebuilt and running before we get out of it."

J. Wood & Bros. Company of Conshohocken, Philadelphia, have posted a notice to the effect that on and after Monday, October 22, a new scale of wages will go into effect, as follows: Puddling on basis of \$3 per ton, with usual advance for Corliss mill. Ordinary labor \$1 a day. Other wages, including sheet, bar and flue mills, uniform reduction of 10 per cent. This notice is in substance identical with notices posted at the Schuylkill Iron Works of Alan Wood Company, and the Conshohocken Tube Works. The latter works have recently resumed operations in full after a shut down of six months.

The Portage Iron Company, Limited, at Duncansville, Pa., have resumed operations in all departments on double turn.

The plant of the Stewart Wire Company, Easton, Pa., manufacturers of iron and steel wire, was put in operation on October 1, having been idle since January 15 of this year. Henry Palmer became president of this concern in June last, succeeding Charles Stewart, who had been president since their formation in May, 1892. Mr. Stewart continues with the concern as a director. On October 1 the Stewart Wire Company established a sales office at 209 Broadway, New York City.

In the matter of the assignment of James B. Scott & Co., tin plate manufacturers, of Pittsburgh, the auditor's report has been filed, and the creditors will receive 40 per cent. of their claims. The amount available for distribution is a little over \$80,000.

The new blast furnace of the Salem Iron Company, Leetonia, Ohio, went into operation last week. This furnace is 75 feet high and 17 feet wide at the bosh, and is expected to turn out about 200 tons of iron per day. Julian Kennedy, the well-known engineer of Pittsburgh, had charge of the erection of the furnace.

As soon as the repairs now under way at the Burgess Steel & Iron Works, Portsmouth, Ohio, are completed, the entire plant will be put in operation.

Machinery.

The Totten & Hogg Iron and Steel Foundry Company of Pittsburgh, manufacturers of rolling mill and tin mill machinery, engines, &c., have just closed a contract with the National Tin Plate Company of Anderson, Ind., for the machinery for their new tin mill plant, which they are erecting in that city. It will be a four hot mill plant, of the latest and most modern design.

The Leechburg Foundry & Machine Company of Pittsburgh have now ready for shipment the equipment for the new plate plant of the Morton Tin Plate Company, at Cambridge, Ohio. The equipment includes three hot mills of the regulation size, 24 x 32 inches, three cold mills 20 x 32 inches, three doubling shears, two squaring shears, one Mesta patent pickling machine and one No. 2 roll lathe. The Leechburg Foundry & Machine Company are also erecting in the tin plate plant of Wallace, Banfield &

Co., Limited, at Irondale, Ohio, one Mesta patent pickling machine which contains some new improvements and attachments, which are expected to increase the pickling capacity of the machine fully 50 per cent.

The Lackawanna Iron & Steel Company will increase the capacity of their lower steel plant, known as the Scranton Mill, by adding two large pressure pumps to their present hydraulic system. The pumps are to work under a pressure of 450 pounds per square inch and will be built by the Snow Steam Pump Works of Buffalo, N. Y.

The J. A. Fay & Egan Company of Cincinnati have been awarded a gold medal for their display of wood working machinery at the Antwerp Exposition.

The Union Foundry & Pullman Car Wheel Works, the property of which makes one of the departments of the Pullman Palace Car Company's works, at Pullman, certified to a dissolution of their organization on the 6th inst., and surrendered their charter. The property of the concern was sold to the Pullman Company. The capital stock of the company was \$500,000, divided into 5000 shares, of which George M. Pullman owned 4998. September 29 the directors decided to close the business under the old corporate name.

The Cleveland Twist Drill Company of Cleveland, Ohio, were awarded a gold medal for their products at the Antwerp Exposition.

Armstrong Bros. Tool Company, 76 and 78 Edgewood avenue, Chicago, are highly gratified with the steadily increasing demand for their tool holders. They are at work on, and will soon have ready for the market, two more sizes of their boring tools and also a large lathe and planer tool holder. The latter tool will be 1½ x 2¼ x 20 inches, using ¾ inch square cutter. It will be brought out in rights and lefts, and the right hand tool will be found peculiarly adapted to boring out large pieces, such as locomotive tires, piston rings, &c. This, like the company's other tools, will be a steel drop forging, the cutter slot being worked from the solid and perfectly straight.

The main engine for the Sylvan Steel Works, at Moline, Ill., was received last week and is now being placed in position. It was built by Mackintosh, Hemphill & Co., Pittsburgh, and is rated at 1500 horsepower.

The Cleveland Twist Drill Company, Cleveland, Ohio, are running their plant full time and with a full complement of men, and report the outlook for the future as decidedly encouraging.

The Filer & Stowell Company of Milwaukee, Wis., foundrymen and machinists, are about to add an extension 140 x 80 feet to their works.

Geo. R. Lombard of Augusta, Ga., has turned his foundry business into a stock company and has applied for articles of incorporation for the Lombard Iron Works & Supply Company, capital \$100,000. A portion of the stock will be distributed among the men in his employ. A new boiler shop will be built.

D. Saunderson's Sons of Yonkers, N. Y., manufacturers of pipe cutting and pipe threading machinery, have begun the erection of a four story brick addition to their factory. It will have a frontage of 108 feet and a depth of 95 feet.

The Laidlaw-Dunn-Gordon Company's new plant, at Tweedvale, Ohio, is nearing completion, and the company hope to commence the removal of their Cincinnati plant to their new quarters by December 1 next, and as soon as that is successfully accomplished the Hamilton Works will also be removed.

A new company, organized with a capital of \$150,000, for the purpose of manufacturing wood working machinery, desire to establish works at Scranton, Pa., and have asked the Board of Trade of that city to extend its aid.

The plant of the Cleveland Foundry Company, Cleveland, Ohio, has been burned, entailing a loss estimated at \$100,000.

John R. Saylor and Richard Stillman of Philadelphia have purchased an acre of ground along the Reading Railroad, in the Sixth Ward, Pottstown, Pa., for the erection of machine works. A brick building will be erected at once and a plant put in for the repairing of large machinery and doing other work in the same line. The Reading Railroad Company will furnish siding facilities for the new industry, which

will be known as the Pottstown Machine Company, and which, it is expected, will be in operation in a short time.

The plant of the Lincoln Foundry & Machine Company, at Pittsburgh, under erection for some months, is practically completed. The new concern will engage in the manufacture of sand and chilled rolls, rolling mill castings of all kinds and brasses for all purposes. Otis H. Childs is president and James Kirkwood secretary and treasurer.

Hardware.

The Standard Mfg. Company, Concord, N. H., have been organized for the purpose of manufacturing a patent lamp filler attachment. The incorporators are Thomas F. Haskins, W. A. J. Giles, Geo. B. N. Dow, Daniel Giles and Harry R. Hood. The capital stock is \$100,000.

At a special meeting of the stockholders of the Stanley Works, New Britain, Conn., held on the 9th inst., it was decided to increase the capital stock of the company from \$400,000 to \$500,000.

The employees of the Lockwood Mfg. Company, South Norwalk, Conn., are working five days a week, eight hours a day, with a good prospect that they will soon be working a full week. The company's new addition to their plant is rapidly approaching completion.

The factory of the Anderson Tack Company, Rockland, Mass., was entirely destroyed by fire on the 6th inst. Twenty-six machines were destroyed, together with a large stock of manufactured goods. The fire originated in the blowing room of the plant and is supposed to have been caused by spontaneous combustion.

The Geneva Cycle Company have recently been organized at Geneva, Ohio, and their new factory will, it is thought, be running within 30 days. J. A. Carter is president of the company, Harry J. Turner vice-president, and C. I. Chamberlin secretary and treasurer. Mr. Carter was formerly connected with the Eagle Lock Company of Terryville, Conn.

A contract has been let for an addition, 2 x 200 feet, to the Hartman Mfg. Company's plant at Ellwood, Pa.

The Pope Mfg. Company, Hartford, Conn., have 725 men employed on full time, and several departments are working until 10 o'clock evenings.

The Collins Company, Collinsville, Conn., are working full time with 600 hands employed.

The mill of the Standard Horse Shoe Company, at South Wareham, Mass., was destroyed by fire on the 7th inst. The insurance on the property was \$30,000, which is understood to cover the loss. The works will be rebuilt.

The Fowler Bolt Works, Anderson, Ind., which have been shut down for two years, have resumed operations with a full force of hands. The plant is being run with non-union men. One hundred hands are employed.

The G. F. Quinn Refrigerator Company, Portland, Maine, have been incorporated, the directors of the company being G. F. Quinn, W. J. Gentry and W. T. Jordan. The capital is \$10,000.

The Tyson-Zimmerman Shutter Fastener Company, Frederick, Md., have purchased the shoe factory in that place, and will use it for the manufacture of their goods.

The Vitrified Wheel Company, Enfield, Conn., have increased their capital stock from \$60,000 to \$100,000 and the number of shares to 400. Twenty per cent. of the increased capital has been put in cash.

The Consolidated Steel & Wire Company will erect a \$10,000 warehouse at St. Louis, Mo.

The Farmers' Mfg. Company, Norfolk, Va., will, we are advised, shortly be in the market for two carloads of fine soft steel nails; one carload assorted tack and hoop nails; 50,000 sets of light crate hinges, and 3,000,000 patent hoops.

The Lamar Iron Works, Lamar, Mo., will enlarge their present facilities for the manufacture of the Howard plow.

Wagner Mfg. Company, Sidney, Ohio, have just completed an addition to their foundry building and have added a number of new machines to their finishing department, which will enable them, they advise us, to turn out about one-third more goods than heretofore.

The National Saw Company have bought the title and material of the Eagle Saw Company, Newark, N. J., which was dissolved about a year ago by the owners, J. C. Hall and Wesley McClaren.

The Stoddard Mfg. Company, Dayton, Ohio, manufacturers of agricultural implements, are preparing to resume business about November 1, beginning with about one-third their regular force.

The contracts have been let for the erection of the buildings for the Riverside Agricultural Implement Works, Anderson, Ind., which, when completed, will give employment to 250 men. The plant will, it is expected, be in operation by February 1.

Work has been commenced on the duplicate plant of the Wright Shovel Company, Anderson, Ind., which, when in operation, will give employment to an additional force of 125 men.

The Whitely Reaper Works, Muncie, Ind., which were destroyed by fire some months since, will be rebuilt, and work on the new buildings will be commenced in 30 days. The buildings will be three-story brick structures.

The works of the H. M. Myers Company, Beaver Falls, Pa., manufacturers of shovels, spades and scoops, have been closed down for about two weeks for the purpose of taking stock, as October 1 is the close of the fiscal year of this concern. A few days ago notices were posted in different parts of the plant to the effect that a slight reduction in wages would be made, amounting to 10 per cent. in all departments except common labor, which would be reduced 5 per cent. The notice also stated that these reductions in wages had been made absolutely necessary by the low prices ruling for shovels, which are much lower at this time than ever before in the history of the trade. It is expected the men will accept the reduction and that the works will probably resume operations during the present week.

The Toledo Bicycle Works, successors to the Toledo Bicycle Company, Toledo, Ohio, builders of the Dauntless bicycles, are making some extensive alterations and additions to their plant. They have put in three large pieces of machinery for the construction of bicycles, and will shortly add two more. It is the purpose of this concern to turn out from 2000 to 2500 wheels during next year. The firm report their trade for this year to have been entirely satisfactory.

The Indiana Bicycle Company of Indianapolis are reported to be making preparations to build 20,000 Waverly bicycles. As soon as the new drop forge department is complete a full force of 600 men will be given employment. This will be in about four weeks. This company were not affected by the hard times and expect to do twice as much business next year.

The Monarch Cycle Company, Lake and Halsted streets, Chicago, Ill., are making rapid strides toward the front as manufacturers of strictly high grade bicycles. Nearly 100,000 square feet of floor surface is utilized and upward of 300 skilled mechanics are employed almost constantly on the large product of bicycles turned out by this concern. Upward of \$20,000 worth of automatic machinery has lately been added to their extensive plant, and they expect to produce an average of 100 bicycles per day after December 1 for the following five months. The growth of the Monarch Cycle Company has been almost phenomenal, as in 1892 only 1000 bicycles were produced by this company and 5000 in 1893; this season upward of 7500, and for the season of 1895 they will build 15,000 machines.

A license to incorporate under the laws of Illinois has been issued to the Perfection Stay Wire Fence Company, Mount Morris, Ogle County. Capital stock, \$10,000. Incorporators, A. W. Brayton, G. C. Bovey, B. T. Ryder, W. H. Jackson and T. W. Wingert.

The Waddell Wooden Ware Works, Greenfield, Ohio, state that they are running full time with a full set of hands, more than they have ever worked, and for the last 30 days they have been running at night to fill orders. The products they are now pushing are coffee mills, money drawers and showcases.

The Sun Mfg. Company, Greenfield, Ohio, advise us that they have had a good trade all the summer on their specialties, and are now running full time with a full force of men.

The Columbus Wire Works, Columbus, Ohio, state that they are behind with orders and are now working more men than

at any former period in the history of the concern, but still find some difficulty in securing workmen such as they require to do their special fine work. They say they have had a good trade in all their wire specialties and regular product.

Deved Sash Weight Works, successors to the Baltimore Smelting Works, Baltimore, Md., announce that they have completed their new plant for the manufacturing of sash weights and that they are now prepared to supply orders promptly. Mr. Deved, in view of his long experience in the sash weight business as connected with the Baltimore Smelting Works, and with a newly and modernly equipped plant states that he is in a position to turn out better weights than ever before.

The Wrightsville Hardware Company, Wrightsville, Pa., in order to meet the requirements of their increasing business, have recently built a new brick power house 40 x 42 feet, and installed therein a 100 horse-power Corliss engine, and a 125 horse-power boiler. This installation, with the use of their old steam plant as an auxiliary, will not only furnish the additional power required in their own works, but will be used to furnish power for a 700-light dynamo, which they contemplate installing, with a view to the introduction by them of a system of electric lighting in the town of Wrightsville. The company will also build an extension to their foundry 50 x 40 feet, which will make the total area of their foundry 12,500 square feet; and a new two-story brick office building 20 x 32 feet. When completed, the proposed additions will admit of the employment of about 175 hands. About 110 hands are at present employed, and the works are running on full time.

Miscellaneous.

The Denver White Lead Company, Denver, Col., competitors of the National Lead Trust, supplying 90 per cent. of the white lead used in Colorado and shipping considerable quantities to the Northwest and to Texas, are about to enlarge their plant in order to meet the increasing demand for their product.

The Wells & Newton Company of Chicago, plumbers and steam fitters, are to be succeeded by the Wells-Newton Quay Company with a capital stock of \$50,000. The incorporators are D. Milroy Quay, Samuel J. Felty, Crosby Adams and Henry M. Bacon.

The Western Stove & Mfg. Company of Milwaukee, Wis., were incorporated on the 8th inst., on application of Leopold Kreielscheiner, Max Hirschfeld and G. W. Levy. This company will manufacture and deal in gasoline and gas stoves and ranges and other hardware. Their capital stock is \$15,000.

The Wisconsin Bridge & Iron Company of Milwaukee have been awarded the contract to build the new drawbridge at Port Hope, in the town of Fort Winnebago, across the Fox River. It is to be an iron counterbalance bridge and will be 103 feet long, with a long arm 70 feet and a short arm 32 feet.

The Filer-Stowell Mfg. Company of Milwaukee have contracted for the erection of a considerable extension to their plant. The addition, when completed, will enable the company to give employment to 100 more men than they are now able to employ owing to limited space. The extension will be 140 x 80 feet and 40 feet under the crane. It is to be completed, according to the terms of the contract, in two months. At the present time the company are giving employment to 300 men. Their experience in the building line, the officers of the company state, has clearly demonstrated to them that labor and material are not much cheaper than before. "Two years ago," said an officer, "we built an exactly similar extension. The only difference this year is that we have had half a dozen contractors bidding for the work and the result of their competition enables us to build now 5 per cent. cheaper."

The new Kansas City Steel & Iron Works, at Kansas City, Mo., are still increasing their capacity for work. Mining picks and other mining tools are the principal articles of manufacture at the present time. These articles are in large demand now. Orders have recently been received from mining companies in Illinois, Missouri and several far Western States.

Kelly & Scott, whose new factory for making fire proof coverings, at Mineral Point, Wis., was recently burned, have decided to make a fresh start.

The Vulcan Iron Works Company is the name of a new concern organized to manufacture mining machinery, railroad supplies, &c., with office and factory at 1709-1731 Blake street, Denver, Col. The president of the concern, D. C. West, has for three years been connected with the Dimon & Adams Mfg. Company. The new company will be under the management of Gilbert H. Denton, for many years the leading spirit in the Gilbert H. Denton Iron Works Company, which concern are absorbed by the new company. The company will manufacture the Reynolds whim, the King Darrah concentrator, architectural iron and steel bridge work, frogs, crossings, switches and other railway supplies, rods, bolts, nuts and ore cars.

It is stated that the Bath Iron Works, Bath, Maine, would be removed to New London, Conn., providing the latter city built a dry dock to take on vessels 600 feet in length, and made a long lease of it to the iron works company, or a change of location would be made and a dry dock be built by the company if New London would pay about \$125,000, the estimated amount that the concern must sacrifice by making a change of location.

The court has passed an order authorizing Mayor Latrobe and Charles T. Crane, receivers of the South Baltimore Car Works, Baltimore, Md., to pay to the creditors a dividend of 25 per cent. and interest. The dividend amounts to about \$66,000, and is the third paid thus far, making a total of 75 per cent. and interest received by the creditors. It is the expectation of the receivers to pay a final dividend of 25 per cent. in December, and to put the company back into the hands of their officers.

Fire damaged the establishment of the Detroit White Lead Works, 117 Lake street, Chicago, to the extent of \$25,000 on October 15.

A general revival of business is reported from Hartford, Conn. Almost all the works have largely increased their forces during the past few months, and have dropped the short time schedule which prevailed for nearly a year. A similar revival of manufacturing business in Meriden, Bridgeport, and other manufacturing cities in Connecticut is reported.

It is stated that the Westinghouse Electrical Mfg. Company are preparing to concentrate all of their work at Brinton, Pa., where they have established one of the largest machine shops in the world. The company's factory at Newark, N. J., in which 900 men are employed, is to be abandoned, and already some of the machinery has been removed. The workshop in New York City will be vacated also, and it is expected that many of the hands will go to Brinton. The new shops are only one story high and will be nearly $\frac{1}{2}$ mile long. Provisions are made for employing 4000 men.

The Industrial Works of Bay City, Mich have received a contract from the Government to build a locomotive crane for navy yard use. The company are figuring on other important orders from the Government and on several extensive railway contracts. Some months ago an order for a steam shovel was received by this concern from Sweden. The shovel was shipped last May and reached its destination some six weeks later. W. Watts, an experienced operator from Omaha, Neb., was sent over by the company to set up the machine and put it in running order. He did so, and when all was in readiness, the shovel was exhibited before the king and royal family and many prominent business men. The country had never seen a more distinguished audience, and when the machine was found to answer every requirement they were loud in their praises of American workmanship. The shovel was set to work at iron ore, and the manner in which it did its work was perfectly satisfactory to the purchasers. The shovel was bought for use on the Swedish State railways. It was ordered on recommendation of a committee of Swedish master mechanics who made a tour of this country last summer for the purpose of equipping their Government with the most modern railway machinery.

The Iron and Metal Trades.

In a published interview, George B. Roberts, president of the Pennsylvania Railroad, says: "So far as my observation goes, there is already a general return throughout the country to manufacturing activity; the manufacturers of Iron are more active now than for a year past. It is true that prices are almost down to cost, but there should be an improvement in them. The relations between the prosperity of our railroad system and the prosperity of manufacturers in general, and Iron manufacturers especially, are, of course, very intimate. The railroads are enormous purchasers, and any limitation or diminution of their purchasing power is immediately and severely felt in many branches of trade. The material account of the Pennsylvania Railroad is less today by 50 per cent. than it was a year ago."

The last sentence reveals the cause which is at the root of all the misery in the Iron trade. It was only lately that the annual report of the New York Central road revealed an astonishing aggregate of money saved in buying less supplies than usual. When the great corporations have been forced to practice economy in this way what may be expected of the weak kneed railroads?

Common misery seems to be drawing manufacturers in different branches closer together. The Coke makers have been talking of some arrangement lately, aiming at more remunerative prices. The Bar Iron manufacturers are trying to get together. In the Barb Wire and Wire Nail trade earnest efforts are being made to render excessive output uncomfortable by fines. Usually it takes a rising market to make pools work smoothly. Still, the assured peace of a successful pool which does not abuse its power is better than a free fight, with his Satanic Majesty picking up the stragglers.

Bessemer Pig is steadier in the Pittsburgh market and weaker east of the Alleghany Mountains. Billets are easier in the East, but as yet buyers are not taking hold to any considerable extent. Pittsburgh is quite steady, but Wheeling has still some \$15.75 Steel to sell. The Chicago district is reported to be well booked on both Billets and Rods up to the end of the year, some considerable orders having been taken lately. Further East Rods are weaker, at \$22.50 @ \$23.

Bars have been making price records lately. Thus a block of 500 tons for car building sold at 95¢, delivered, at Chicago, while Pittsburgh records 90¢ @ 100 lb for common Iron.

A fair amount of structural work is coming up in New York, and quite some bridge work is being placed in different parts of the country. Still anxiety as to winter work is growing, and the outlook for the next few months is far from bright. This is particularly true of those lines which are more dependent upon the season when outdoor work restricts consumption. This applies to Cast and Wrought Pipe, municipal and railroad work, and to some considerable extent to building operations. Preparations for spring work usually do not begin until February.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., October 16, 1894.

There is no decided change to note in the market for Iron and Steel, except some prospect of more active buying in both Pig metal and Billets. This is more in the way of renewals than to meet any special increase in requirements, so that there is nothing significant in the movement, except that makers of Steel have lowered their prices to a point at which consumers are willing to replenish their stocks. Bessemer can be done at about \$12.50 and Billets at \$18.25, which, while considerably lower than during the past three or four months, are not considered as absolutely rock bottom prices. Stocks are so low, however, that consumers must make a beginning somewhere, and as \$18 @ \$18.25 has been their limit for several weeks past, they are willing to let them stand for moderate quantities. Mill and Foundry grades are in good demand, and while supplies of the former are somewhat restricted, prices are easy at figures quoted for several weeks past. Finished Material is dull, weak and lower, with no immediate prospect of improvement. Mills are running shorter time and it is feared that during the balance of the year will not be able to get back to the average output made during August and September, although it is believed that things are shaping for great activity after the turn of the year.

Pig Iron.—Reports are a little contradictory in regard to the condition of the Pig Iron market. The truth seems to be that in low grade and standard Mill Irons there is something of a scarcity, but Foundry Irons are in full supply. At \$10.50 Philadelphia, or \$10 @ \$10.25 Schuylkill and Lebanon valleys, there is as much good Mill Iron as buyers want, but at 25¢ less offers have been turned down. No. 2 Foundry of good quality is nominally \$11.50 @ \$11.75, but buyers claim that they can do better than that—in some cases less than \$11—although to cover their tracks it is called No. 2 Plain. Foundrymen say they get Iron in every way suitable for their purposes at \$11, and whatever name may be given to it they wish nothing better than what they are getting. It is a curious feature that these transactions are nearly all in small lots, carloads up to 100 or 200 tons each. Formerly a low price was given as an inducement to take a large lot, or for spot cash, or some inducement of that kind, but in these times the object seems to be to break into somebody else's trade, so that it is cheaper to make a low price on a small lot than on a large one. All the same, it unsettles prices and makes it extremely difficult to quote the market satisfactorily. Bessemer is weak and lower, \$12.50 @ \$12.75 being a full quotation for November and December, with sales at the inside figures for Philadelphia deliveries. General quotations are about as follows:

Bessemer.....	\$12.50 @ \$12.75
Standard No. 1 Foundry X.....	12.50 @ 12.75
Standard No. 2 Foundry X.....	11.50 @ 11.75
No. 2 Plain.....	10.75 @ 11.00
No. 1 Soft.....	11.50 @ 11.75
No. 2 Soft.....	10.75 @ 11.00
Standard Gray Forge.....	10.50 @ 10.75
Ordinary.....	@ 10.25

Steel Billets.—Negotiations are in progress for several good sized lots on the basis of \$18 bid, and about \$18.25 asked. Consumers are getting rather bare of stock, and although the demand for the product is very small, renewals cannot be postponed indefinitely, hence

the probability of several sales being made in course of a day or two. Makers are asking for bids, and although they talk \$18.50 rather strongly, it is not unlikely that the right kind of a buyer would be accommodated at unexpectedly liberal figures, providing a firm offer was made.

Finished Material.—Business continues in the same dull and unsatisfactory condition as noted for some weeks past. The amount of work coming out is very small, and as mills are all running close to the end of their orders competition is closer than ever. Prices are extremely weak, Bars as low as 1.10¢ @ 1.15¢ for good quality, either Iron or Steel, but it is not a question of price so much as absence of demand. Plates are doing a little better by comparison, but even in that line business is scarce and 1.25¢ @ 1.30¢ a full quotation for the general run of orders. The Shape mills are doing moderately on old orders, but there is not much new work coming in, and for the present the outlook for Finished Material is anything but bright. There is a vast amount of work under consideration and sooner or later it is sure to be undertaken, but there is nothing important likely to go through in the immediate future. Toward spring it is thought the movement will get fairly under way, but in the meanwhile a small hand to mouth business is about all that any one expects. Prices for small lots are about as follows, but on large orders, if such were on the market, special rates would be made:

Grooved Skelp.....	1.25¢ @ 1.30¢
Standard Refined Bars.....	1.20¢ @ 1.25¢
Medium quality.....	1.10¢ @ 1.15¢
Tank Steel.....	1.30¢ @ 1.35¢
Heavy Plates.....	1.30¢ @ 1.40¢
Shell.....	1.50¢ @ 1.60¢
Flange.....	1.60¢ @ 1.80¢
Angles.....	1.40¢ @ 1.50¢
Beams and Channels.....	1.50¢ @ 1.60¢

Old Material.—Some business is being done, but there is no activity and not as much firmness in prices as there was a little while back. General quotations for lots delivered are about as follows:

Heavy Melting Steel.....	\$10.00 @ \$11.00
Light Melting Steel.....	8.00 @ 8.50
No. 1 Wrought Scrap.....	10.00 @ 11.00
Machinery Cast.....	9.00 @ 10.00
Wrought Turnings.....	8.00 @ 8.50
Cast Borings.....	6.00 @ 6.50
Old Iron Rails.....	11.50 @ 12.00
Old Car Wheels.....	9.50 @ 10.00

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, October 17, 1894.

There is little to be said of Pig Iron. The demand during the week has been almost wholly from the jobbing foundries in this district, and has been freely met at previous prices. Much Iron has been melted by the Iron Pipe works, but this was all contracted for in August and September. The car works are using comparatively little Iron, and stove and agricultural works, while increasing their output of product moderately, continue to be restricted buyers of the raw material. While the demand for Pig Iron is comparatively small, the furnaces are so well under contract that they are not urgent sellers and are able to obtain pretty full prices for what they have to offer. While there is no urgent demand in sight, there is undoubtedly a steady increase in the consumption of Iron, and this has already cut down surplus stocks in the South

and is likely to bring the market into a better condition in the not remote future. The demand from the East is comparatively small. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....	\$10.25 @	\$10.75
Southern Coke, No. 2.....	9.75 @	10.00
Southern Coke, No. 3.....	9.10 @	9.25
Ohio Soft Stone Coal, No. 1.....	14.50 @	15.00
Ohio Soft Stone Coal, No. 2.....	14.00 @	14.50
Lake Superior Coke, No. 1.....	12.00 @	12.50
Lake Superior Coke, No. 2.....	11.00 @	11.50
Hanging Rock Charcoal, No. 1.....	16.00 @	16.50
Hanging Rock Charcoal, No. 2.....	15.50 @	16.00
Tennessee Charcoal, No. 1.....	13.00 @	13.50
Tennessee Charcoal, No. 2.....	12.00 @	12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	15.75 @	16.75
Lake Superior Car Wheel and Malleable.....	14.25 @	14.75

Forge.

Gray Forge.....	8.75 @	9.00
Mottled Coke.....	8.50 @	8.75

Chicago.

(By Telegraph.)

Office of The Iron Age, 59 Dearborn street, CHICAGO, October 17, 1894.

Conditions are decidedly better with respect to volume of business. Only one line appears to be inclined to dullness and that is Bar Iron. All others are fairly active and show an improvement over previous weeks. The Hardware trade is in better shape than at any previous time this fall. Hardware stocks are being ordered on account of new business ventures, and people appear to have again recovered confidence. It must be said, however, that Iron and Steel prices show very little disposition to advance, and in some cases further weakness is noted. This is of course due to the fact that consumption is as yet below the capacity of active works.

Pig Iron.—Trade continues active in local Coke Iron. The business now doing is well distributed, covering a good range of buyers. Prospects are excellent for the immediate future. No very large contracts have recently been placed, yet the volume is good, owing to the large number of small orders. Some inquiries are coming up for round lots of special grades. Quotations on local Irons are unchanged and there is little probability that they will be higher. It has been found that when higher prices are asked the sellers of Southern Irons at once embrace the opportunity and take business. The Southern furnace companies have had better trade the past week than for a long time. Sales are reported up to 500-ton lots. Inquiries are improving for Southern Irons, and, at the same time, prices are being reduced so as to more nearly meet buyers' views and the competition from Northern brands. Lake Superior Charcoal is quiet. Quotations are given as follows for cash.

Lake Superior Charcoal.....	\$13.00 @	\$15.00
Local Coke Foundry, No. 1.....	10.25 @	11.00
Local Coke Foundry, No. 2.....	10.00 @	10.25
Local Coke Foundry, No. 3.....	9.50 @	10.00
Local Scotch.....	10.25 @	11.00
Ohio Strong Softeners No. 1.....	13.00 @	13.50
Southern Silvery, No. 1.....	..... @	.....
Southern Silvery, No. 2.....	..... @	.....
Southern Coke, No. 2.....	10.50 @	10.75
Southern Coke, No. 3.....	10.25 @	10.50
Southern, No. 1 Soft.....	10.50 @	10.75
Southern, No. 2 Soft.....	10.25 @	10.50
Alabama Car Wheel.....	17.50 @	18.00
Jackson County Silvery.....	15.50 @	16.00
Other Ohio Silvery.....	14.25 @	14.50
Coke Bessemer.....	11.25 @	11.50
Coke Malleable.....	10.5 @	11.25
Spiegeleisen 20%.....	..... @	26.00

Bars.—The past week has been one of the dullest in months. Inquiries are few in number and sales by manufacturers have been extremely small. Quotations on mill shipments are continued at 1¢ @ 1.05¢, Chicago, but better fig-

ures are obtained on good specifications. Guaranteed Iron is quoted at 1.15¢ @ 1.20¢; Soft Steel Bars from strictly Billet stock are quoted by the leading makers at 1.20¢ @ 1.25¢, Chicago, but competition is increasing and lower prices are reported by some mills. Jobbers have had a much better run of orders recently. Although they have been small the aggregate makes an excellent volume of business. Lumbermen are now laying in their winter supplies and considerable trade has been received from that source. Miscellaneous consumers are also taking considerably more stock. Prices on small lots are rather lower and Bar Iron may be quoted at 1.15¢ upward, while Soft Steel Bars are selling at 1.25¢ upward.

Structural Material.—Orders for bridge work have again been good. The railroads are entering the market a little more freely, and one large system has placed contracts for several fair sized structures to replace old bridges. The low prices now going are very tempting to officials who have available funds. The demand for Beams keeps up quite well for small lots, so that the local yards are still busy in cutting and fitting. Several good sized buildings are in sight both in this city and in outside towns, so that prospects are favorable for continued business. Quotations for mill shipments, Chicago delivery, are as follows: Beams and Channels, 1.50¢; Angles, 1.40¢ @ 1.45¢; Tees, 1.65¢; Universal Plates, 1.40¢ @ 1.45¢. Small lots of Beams and Channels from stock, 1.75¢ @ 1.90¢; Angles, 1.50¢ @ 1.60¢; Tees, 1.70¢ @ 1.80¢.

Plates.—Dealers report a good volume of both mill and store business, and state that trade is gradually increasing from month to month. The business doing is much beyond that of last year, and a gain is also reported in dollars and cents notwithstanding the much lower prices being obtained. Contracts are being made for shipments running through the winter in anticipation of spring business. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.40¢ @ 1.50¢; Flange Steel, 1.65¢ @ 2.10¢; Fire Box, 1.65¢ @ 5¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.70¢ @ 1.80¢; Tank Steel, 1.50¢ @ 1.65¢; Flange Steel, 2¢ @ 2.15¢; Boiler Tubes, in carloads, 75 % off.

Sheets.—Buyers are still soliciting mills to take their orders. Much difficulty is experienced in finding a mill which will undertake to contract for delivery during this month. Some of the leading mills will make no promises earlier than the middle of November. Under the circumstances prices may be expected to advance considerably, but manufacturers are pursuing a conservative policy and still quote old rates whenever they are able to take on additional business. We, therefore, quote mill shipments of No. 27 Common Iron at 2.35¢ @ 2.40¢, Chicago; Steel Sheets, 2.45¢ @ 2.50¢, and Galvanized Sheets, 75 and 10 and 5 % off. Sheet Copper, 14¢ bare in large lots. Small lots of No. 27 Common Black Sheets from stock are unchanged at 2.45¢ @ 2.50¢; Galvanized Sheets, 75 and 5 % @ 75 and 10 % off.

Merchant Steel.—The new business of the week was somewhat improved in volume over that of the previous one. Orders, however, were of a moderate character and included nothing heavy. Specifications are coming in on contracts, but thus far there has been no rush. Mill shipments, Chicago de-

livery, are quoted as follows: Smooth Finished Machinery Steel, 1.50¢ @ 1.60¢; Smooth Finished Tire, 1.50¢ @ 1.60¢; Open Hearth Spring Steel, 1.75¢ @ 1.80¢; Bessemer Machinery, 1.40¢ @ 1.45¢; Bessemer Tire, 1.40¢ @ 1.45¢; Ordinary Tool Steel, 5½¢ @ 7¢; Specials, 10½¢ and upward.

Billets and Rods.—The Billet situation is excellent from producers' standpoint. More large orders have recently been placed, and enough orders have now been secured to cover the output of the local works up to the end of the year. Quotations have therefore been withdrawn. The Wire Rod output is also covered in the same way. All the Rod mills in this section of the country, in fact, are reported to have about all they can do this year. No quotations are available under the circumstances.

Rails and Track Supplies.—The demand for Steel Rails is good for small lots and the local mills are not only well employed, but are likely to be so until some time in December at least. The situation appears to be about as good in this respect as can be expected at this time of the season. Quotations are continued as follows: Standard Rails, \$25 @ \$27; Steel Splice Bars, 1.25¢ @ 1.35¢; Track Bolts, with Hexagon Nuts, 2¢ @ 2.10¢; Spikes, 1.65¢ @ 1.75¢; Links and Pins, 1.65¢ @ 1.70¢.

Old Rails and Car Wheels.—A lot of some 200 tons of Old Iron Rails was sold at \$11. Other transactions are under negotiation. Railroads are trying to sell their stocks of Old Rails, and as usual at such times buyers are shy. Old Steel Rails are unchanged at \$7.50 for short pieces and \$10 @ \$11 for long lengths. Selected Rails are in good demand. Old Car Wheels are in a little demand with prices unchanged at \$10.

Scrap.—Dealers appear to be making strong efforts to sell and prices are weaker. They are now working on very small margins, and in some cases figure a profit of only 15¢ per ton. Dealers quote the following selling prices per net ton: Railroad Forge, \$9; Dealers' Forge, \$8.50 @ \$9; No. 1 Mill, \$7; Pipes and Flues, \$6.50; Axles, \$13.50 @ \$13.75; Heavy Cast, \$7 @ \$7.50; Stove Plates, \$5 @ \$5.50; Cast Borings, \$3.25; Wrought Turnings, \$5; Axle Turnings, \$6.25; Fish Plates, \$10; Horseshoes, \$9; Mixed Steel, gross ton, \$5.50; Heavy Melting Steel Scrap, \$7 @ \$7.50.

Metals.—Quotations on carload lots of Lake Copper are continued at 10¢, and on small lots of casting Copper, 9½¢. Spelter is steady but quiet at 3.25¢ @ 3.27½¢ for carload lots. Pig Lead is unchanged at 2.95¢, with sales of some 200 tons.

G. H. Sibell & Co., 1627 and 1628 Manhattan Building, Chicago, have been appointed agents for Chicago and vicinity for the American Iron & Bolt Company, successors to L. M. Dayton of Cincinnati, manufacturers of Bar and Sheet Iron, Bridge Rods, Hinges, Bolts, Nuts, &c.

F. L. Donaldson, room 334 The Rookery, Chicago, has been appointed sales agent for the Indiana Iron Company of Muncie, Ind., manufacturers of Iron and Steel Bars, Bolts, Nuts, &c. Mr. Donaldson is well and favorably known to the Iron trade of both the East and the West.

J. Painter & Sons Company of Pittsburgh announce that they have appointed Casey & Day, suite 445 The

Rookery, Chicago, their sole North-western agents, who will at all times be authorized to quote the company's lowest prices. This is an important addition to the fine line of interests already represented by Casey & Day.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, }
PITTSBURGH, October 16, 1894. }

As compared with a week or two ago, the situation to-day in the Iron and Steel trades shows improvement and the outlook is more encouraging. By improvement we do not mean to imply that prices are any better, for they are not, with the single exception of Bessemer Pig, which has stiffened up to some extent. The statement that the situation shows some improvement is based on the fact that most of the mills are busy on orders for close delivery and the volume of business coming up each day leads to the belief that, while buying will doubtless be of the hand to mouth character for some time, buyers are in urgent need, and having no stocks must come into the market for supplies at regular intervals. A number of the larger concerns could be named whose order books for the next two or three weeks are filled up. A leading concern has recently lost two or three good orders because they could not get the stuff out soon enough for the customer. The foundries report that they are busier and one such concern in this city states that in September they did more business than in any one month during the last year and a half. As stated above prices are no better, but the belief is strong that bottom has about been reached and any direct change must be in the direction of higher values.

Pig Iron.—The continued drooping each week in the price of Bessemer Pig has evidently been checked, and some of the furnaces are refusing to shade \$10.25 in the Valley, equal to \$10.90, Pittsburgh. Others are reported as refusing to go below \$11, Pittsburgh, and one concern is on record as refusing to sell even at that price. While the output of Bessemer Pig is very heavy, the maximum of production has evidently been reached, while at the same time consumption seems to have kept right up with production. Bessemer Iron for spot delivery cannot be had in large quantities, and furnaces in position to furnish some Iron for October delivery are getting \$11 for it without any trouble. An order for October and November would likely shade this price about 10¢. Gray Forge is in fair request at \$9.75, Pittsburgh, but offerings are not large. There is more inquiry for Foundry Iron, but prices are unchanged. We quote as follows:

Neutral Gray Forge.....	\$9.75 @ \$9.90	Cash.
All-Ore Mill.....	9.75 @ 10.00	"
No. 1 Foundry.....	11.65 @ 11.75	"
No. 2 Foundry.....	10.75 @ 11.00	"
Bessemer.....	10.90 @ 11.00	"

We note a sale of 1000 tons of Bessemer for prompt delivery at \$11, Pittsburgh, and another of 500 tons at the same price. Also a sale of 1000 tons of Bessemer, for October and November delivery, at \$10.90, Pittsburgh. Also a sale of 500 tons of Bessemer at \$10.15, Pittsburgh.

Ferromanganese.—We note a sale of 25 tons of domestic at \$50, delivered at buyer's mill.

Billets.—The Pittsburgh mills are well filled up with Steel for October delivery and are refusing to shade \$16 at mill. Outside districts, not so favor-

ably situated and having some Steel to spare for October delivery, quote \$15.75 at mill. Nothing is doing for November and December delivery, the mills refusing to take business at prices offered by buyers. Should present prices of Bessemer Pig be maintained, it is somewhat doubtful if Steel can go much lower. There has been a fair buying movement during the week, but for October delivery only. We note a sale of 1000 tons at \$15.90 at maker's mill, one of 500 tons at \$16, another of 1000 tons at \$15.95, and one of 300 tons at \$15.75, all for October delivery.

Plates.—Some good sized orders are being received from the Boiler trade, and a good deal of bridge material is also being placed. The general demand is also fairly heavy and prices are neither higher nor lower. We quote as follows: Tank Steel, 1.15¢ @ 1.25¢, according to order; Flange Steel, 1.30¢ @ 1.40¢, and Shell at 1.25¢ @ 1.35¢.

Structural Material.—A good deal of Eastern work is coming up and is expected to be placed before long. The two local mills have all they can do, and several orders have been sent adrift because they could not be turned out in time. Prices are unchanged but firm, and we continue to quote Beams and Channels up to 15-inch at 1.25¢ @ 1.35¢, according to order; Angles and Universal Plates we quote at 1.15¢ @ 1.20¢, according to order, and Tees at 1.35¢.

Bars.—There is a fair run of small orders and most of the mills are fairly busy. Prices do not show any improvement and will hardly do so until there is considerably more business being offered. Common Bar Iron has been sold down to 90¢, which figure hardly leaves room for any profit. We quote Common Iron Bars at 0.95¢ @ 1¢ and Steel Bars at 1¢ @ 1.05¢ with usual extras.

Muck Bars.—There is nothing doing and we omit quotations.

Sheets.—The most active branch of the Iron trade is Sheets. The demand is very heavy, and with some of the mills idle on account of the Tin Plate wage dispute, the difficulty in getting anything like prompt shipments has been increased. Some mills are completely sold up for the next three or four weeks. Prices are firm and we continue to quote No. 27 Common Iron at 2.25¢ @ 2.30¢; No. 27 Steel, 2.35¢ @ 2.40¢. The heavy demand for Galvanized Sheets before referred to continues, and some mills are away behind in deliveries. We quote Galvanized Sheets at 75 and 10 % @ 75 and 5 % off, according to order and time of delivery.

Merchant Steel.—There is no improvement either in demand or prices, and we repeat quotations of last week, as follows: Bessemer Machinery, 1.15¢ @ 1.25¢; Open Hearth, Spring, 1.50¢ @ 1.60¢; Open Hearth Machinery, 1.40¢ @ 1.50¢; Machine Straightened Tire, 1.50¢ @ 1.60¢; Sleigh Shoe, 1.50¢ @ 1.60¢; Toe Calk, 1.70¢ @ 1.75¢.

Pipes and Tubes.—A local mill has secured an order for a little over 4 miles of 6-inch Line Pipe for delivery in the gas fields in Indiana. The general demand has fallen off considerably and prices are lower. The season is about over and the large buyers have pretty well covered their requirements.

Skelp Iron and Steel.—There is nothing new to note and we repeat prices of last week, as follows: Grooved Steel Skelp, 1.05¢ @ 1.10¢; Sheared Steel Skelp, 1.15¢ @ 1.25¢; Grooved

Iron Skelp, 1.25¢ @ 1.30¢, and Sheared Iron Skelp, 1.35¢ @ 1.40¢, less 2 % cash in ten days.

Wire Rods.—Some few sales are reported at prices ranging from \$22.50 to \$23 at maker's mill. It should be noted that some concerns refuse to shade the higher price. The Rod mills are understood to be well sold up for the rest of the year and buyers are also pretty well covered.

Wire Nails.—The season is pretty well over and as a result the demand is falling off. It is stated that the established price of \$1 per keg is being pretty generally observed. The regular monthly meeting of the Wire Nail Association is being held in this city to-day. There is nothing new to report in Cut Nails. The demand is light and several of the most prominent mills are idle. We quote Cut Nails at 85¢ @ 90¢, according to averages.

Barb Wire.—The demand is very light, as the season is about over and the large buyers are covered. We quote Four Point Galvanized at \$2 @ \$2.05, and Painted at \$1.25 in carload lots.

Connellsville Coke.—Production and shipments of Connellsville Coke show a slight falling off, and the list of active ovens is smaller. For the week ending on Saturday, October 6, there were 15,086 ovens active in the Connellsville region and 2488 idle, the estimated production for the week in question being 145,453 tons. Compared with the production of the previous week this was a decrease of 1500 tons. In the active list of ovens there was a decrease of 145. Very little Furnace Coke is changing hands, but prices are weak. Furnace Coke for balance of the year delivery is reported as being offered as low as 90¢ per ton. Foundry Coke is also lower in price, and is being freely offered at \$1 per ton.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*, }
Bank of Commerce Building, }
St. Louis, October 17, 1894. }

Pig Iron.—The increased production is making itself felt in prices, which continue to be shaded. No large sales are reported, but the number of moderate sized lots which are being taken is increasing, so that the total business is fairly satisfactory. No. 2 Foundry is quoted at \$10, f.o.b. cars St. Louis, and it is reported that in more than one instance this price has been shaded. Gray Forge is steady at \$9 @ \$9.25. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.75 @ \$11.00
Southern Coke, No. 2 Foundry.....	10.00 @ 10.25
Southern Coke, No. 3 Foundry.....	9.50 @ 9.75
Southern Car Wheel.....	16.50 @ 17.00
Gray Forge.....	9.00 @ 9.25
Ohio Softeners.....	14.00 @ 14.50

Bar Iron.—The market seems settled at 1.05¢ for Common Bar Iron, f.o.b. cars St. Louis. At this price a good trade is reported although the demand has not as yet assumed such proportions that any advance in price is justified.

Barb Wire.—The demand is of a hand to mouth character and no great improvement is looked for at this season. The meeting in Chicago on the 11th inst. did not result in any definite agreement, but it is expected details will be arranged whereby the arrange-

ment existing prior to October will be continued for one year from that date. We understand it is impossible, however, to secure the consent of all the mills to enter the agreement. Painted is quoted at \$1.70; Galvanized \$2.10.

Wire Nails.—This department continues to be the subject of much speculation. Notwithstanding the reported agreement among the Wire Nail manufacturers to sell Nails on the basis of \$1 per keg, Cleveland, there continues to be offered Nails at less prices. The prevailing price quoted by jobbers for carload lots is \$1.10 @ \$1.15, while smaller quantities command \$1.25.

Rails and Track Supplies.—Continued improvement is noted in this department, which applies particularly to Splice Bars, Bolts and Spikes. There is also some inquiry for Old Iron Rails, but as yet no sales of, any moment are reported. Steel Rails are also quiet. We quote as follows: Steel Rails, \$26.50 @ \$27; Old Iron Rails, \$11 @ \$11.25. Track Supplies are quoted as follows: Splice Bars, 1.30¢; Spikes, 1.65¢; Bolts, Square Nuts, 1.90¢; with Hexagon Nuts, 2¢; Steel Links and Pins, 1.50¢; Iron, 1.60¢.

Pig Lead.—A moderate demand is reported at 2.92½¢ @ 2.95¢. Consumers are not disposed to anticipate their wants and continue to buy only as their needs require.

Spelter.—Sales of a few hundred tons at \$3.20 are reported. There is an entire absence of speculation in this metal, and the general run of orders is not sufficiently large to influence prices.

New York.

Office of The Iron Age, 96-102 Reade street, New York, October 17, 1894.

American Pig.—Eastern Pennsylvania makers are endeavoring to get slightly better prices on Mill Irons, but since there is only one consumer in this vicinity the matter possesses little interest for this market. There has been some inquiry for prices on standard Irons for next year's contracts, but nothing whatever has been done in that direction. The majority of foundries are doing little work, and are buying in a hand to mouth fashion. Some small belated inquiries are coming in for Cast Iron Pipe. The majority of the shops are very busy and some of them are unable to take work before the end of the year, when the season practically closes. We quote standard brands \$12.50 @ \$13 for No. 1; \$11 @ \$12 for No. 2, at tidewater. Southern Iron, same delivery, \$11.50 @ \$12 for No. 1; \$11 @ \$11.25 for No. 2; \$10.65 @ \$10.75 for No. 3; \$10.90 @ \$11 for No. 2 Soft, and \$11.15 @ \$11.25 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10 @ \$10.40.

Spiegeleisen and Ferromanganese.—No business is being done in Spiegeleisen. Some of the importers of Ferromanganese are still seeking business in the Pittsburgh market, having quoted as low as \$49.25 there. They state, however, that unless they soon get some encouragement in the shape of orders they will withdraw from that market, leaving it entirely to the local producer, who can then name his own prices and get them. We continue to quote \$20.50 @ \$21 for 20% Spiegeleisen and \$48 @ \$50 for 80% foreign Ferromanganese, all tidewater.

Billets and Rods.—Offerings are more urgent, but business is very light.

We quote \$18.25 @ \$18.50 for Billets and \$25.25 @ \$25.75 for Rods, tidewater. There is no chance of doing anything in foreign material, even on the Pacific Coast, where Wire Rods have been laid down lately from Chicago at \$30.25, delivered, 2000 tons having been taken.

Steel Rails.—The market is very quiet and so far as can be learned no business for 1895 delivery has yet been closed.

Track Material.—We quote as follows for small lots: Spikes, 1.50¢ @ 1.70¢; Fish Plates, 1.20¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.10¢, and Hexagon Nuts, 2.10¢ @ 2.30¢, delivered.

Manufactured Iron and Steel.—The contract for an armory has been placed, but as yet the material for it has not been purchased. The bids have gone in for the structure which is to occupy the site of the New York Hotel. It calls for about 3000 tons of Beams and upward of 1000 tons of cast Columns. A small extension of the Pratt Institute has been placed. The demand for Plates and Bars continues light. We quote: Beams up to 15-inch, 1.30¢ @ 1.50¢ for round lots; Angles, 1.30¢ @ 1.35¢; Universal Mill Plates, 1.25¢ @ 1.35¢; Tees, 1.40¢ @ 1.60¢; Channels, 1.35¢ @ 1.50¢, on dock. Steel Plates are 1.30¢ @ 1.40¢ for Tank; 1.40¢ @ 1.50¢ for Shell; 1.60¢ @ 1.65¢ for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.15¢ @ 1.9¢, on dock, and Common 1.05¢ @ 1.15¢; Soft Steel Bars are 1.10¢ @ 1.30¢; Scrap Axles are quotable at 1.30¢ @ 1.50¢, delivered; Steel Axles, 1.30¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.40¢ @ 1.50¢, delivered; Cotton Ties, 67¢ @ 75¢ per 45-lb bundle, tidewater; Machinery Steel, 1.20¢ @ 1.40¢; Toe Calk, 1.60¢ @ 1.70¢, and Sleigh Shoe, 1.15¢ @ 1.25¢; Tire, 1.25¢ @ 1.30¢, and Spring, 1.65¢ @ 1.70¢, delivered.

Old Material.—We are informed that the sale of 500 tons of Old Iron Rails from the Ontario & Western, quoted at \$12.50 last week, was made at \$11.50. We note a sale of 500 tons of 70-lb Steel Rails at \$9, on line of road, and also 200 tons of Old Car Wheels at \$8.50, delivered to lighter. Old Steel Rails are offering at \$8.50 here, and at \$8 at interior points. A lot of 1000 tons of Old Iron Rails are being offered at \$10.50 on line of road. The demand for Italy has ceased and mill buyers in this territory are scarce.

Geo. P. Bullard of Boston has again associated himself with Josiah E. Bacon, under the firm name of Bacon & Co., and has transferred to the new firm the business of Bullard & Post, dissolved August 31 by mutual consent, together with the New England agencies of Jones & Laughlins, Limited, and J. Painter & Sons Company of Pittsburgh. Mr. Bullard has discontinued his office at 125 Milk street, the new firm being located at 107 Oliver street, Boston. Bacon & Co. are well known as importers of Swedish Iron, and merchants in Bar Iron and Steel, while they will endeavor to increase business in the lines formerly handled by Mr. Bullard—namely, Structural Steel in all its forms, Plates and Sheets, Bands and Hoops, and Cold Rolled Shafting, Hangers, Pulleys, &c.

Financial.

A further rise in the foreign exchange market to a point which has made possible the shipment of gold abroad, is the most notable event in an otherwise exceedingly dull financial week. As October is a month in which, under ordinary circumstances, gold imports are looked for, the export of \$500,000 in the precious metal on Tuesday was regarded with anxiety as the precursor of a possibly large outward movement. In view of the exposed position of the Treasury, with its limited gold balance of less than \$61,000,000, there were reasonable grounds for apprehension lest this store should be encroached on to any large extent. Among the Treasury officials, however, no anxiety is expressed. They do not believe that the export of gold is the inauguration of a general outward movement of the metal, but that it is due largely to local causes in New York. Any public concern that may have existed on this score was largely allayed by a statement published by the banking house making the shipment, to the effect that it was a purely business transaction; that they found that exchange was very scarce and it was actually cheaper to ship gold, and that there was nothing speculative about the matter. The fact that exports of breadstuffs for the month of September were only \$8,000,000, as against \$18,000,000 in the corresponding month of last year, while the increase in value of cotton exported during the same month was very slight indeed, and that imports of coffee and sugar were at the same time unusually large, sufficiently accounts for the scarcity of commercial bills, which brought the foreign exchanges to the point at which gold could be exported with profit. The restricted foreign demand for grain and cotton has continued in the present month, and the supply of bills is still inadequate. Opinions among bankers differ as to whether further shipments of gold will be made by Saturday's steamers, but a slight easing of exchange rates late on Tuesday indicated the likelihood of their being small. The movement is, however, entirely dependent on the supply of bills available against exports of products or securities. Austria is in the market as a purchaser of gold for currency purposes, and this factor may have a bearing on the future movements of the metal.

The unprecedentedly low prices touched by wheat and cotton of late have had the effect of checking to some extent the buying of goods in the West and South, a fact which is reflected in the Clearing House returns for the second week in October. These returns from all the principal clearing houses of the country were smaller than those for the previous week, and exceeded the exchanges of the same period of last year by only 3.1%, being 21.5% less than in 1892. Retail business generally appears to be somewhat in a state of suspense. This is probably to be attributed in great measure to the exciting political campaign now in progress. Politics is occupying the minds and energies of many business men, and others are waiting to see what next month's elections will bring forth before making investments. Until after the elections this factor will continue to exercise a disturbing influence on business.

Speculation on the stock market is still confined to the professional trading element. The market during the week under review has been an exceedingly

narrow one, with no events of any note to break the monotony, beyond the usual gyrations of Sugar, which is still the "star" performer of the market in point of activity. The vagaries of this stock and of its fellow "industrial," Chicago Gas, being utterly unaccountable, have long ceased to have any bearing whatever on the stock market in general. The aggregate of dealings in securities, outside the two stocks above mentioned, has been remarkably small, while prices exhibit little more than fractional changes either way. Western Union sold off a couple of points on Monday, owing to the unfavorable annual statement issued by the company last week, and Manhattan Consolidated also lost nearly five points on rumors of rival lines in contemplation. The market closed on Wednesday dull and flat, but with a strong tone. Railroad bonds have been active, but prices are somewhat irregular. Bonds of a good investment paying character are in very good demand, but the lines offering are quite limited, and second-class bonds are securing a larger share of business. State and municipal bonds meet with ready sale. Government bonds have been active and strong. Closing prices on Wednesday were as follows:

	Bid.	Asked.
4½'s, 1891, continued at 2...	96	.....
4's, registered.....	114½	114½
4's, coupon.....	114½	115
5's, registered.....	118½	118½
5's, coupon.....	119½	119½

Birmingham.

BIRMINGHAM, ALA., October 15, 1894.

Less activity is reported in the Iron trade than for some time past. Sales and inquiries show a falling off, especially in larger orders. The larger customers seem to have bought all they want for some time to come. On the other hand, the smaller foundry trade shows signs of improvement, as orders from this source are very general, showing, however, clear indications of from hand to mouth buying. There is an evident inclination among furnacemen not to increase the output much more, and, while work is continuing on the furnaces under repairs, it is now doubtful if they will start as soon as completed. The general feeling as expressed is, however, a little more confident, and there is less nervousness and less inclination to pay attention to the bearish reports and letters from the agencies. These latter seem panic-stricken, and to judge from their letters the market has gone all to smash. Furnacemen declare, in view of present status of sales and prices, that the agencies are unnecessarily scared, or purposely bearing the market. The cry of "wolf" is losing its force; there is a decided inclination to pay no attention to it. While there is some cutting reported, yet it is doubtful if it is a matter of fact or a matter of imagination or veracity. Personal inspection of order books failed to show any shading of prices that would warrant such reports as are current. The scare of increased freight rates has subsided and no further increase is looked for in the immediate future. The car question is liable to become annoying to local shippers with any marked improvement of trade. With miles of side tracks filled with empty cars, many cases are reported where the railroads could not furnish service, because not enough cars were in repair to handle the business. This non-repairing of rolling stock is one of the serious features of the mill material trade, and any

change in this direction will be a potent factor in local output.

The question of making Tin Plate here in Birmingham has been under discussion for some time. There is no good reason why it should not be made here economically, provided the Steel for this purpose can be furnished here. If Soft Basic Steel could be obtained, manufactured here, there is every reason to suppose that Sheet for Tin Plate would at once be made. As it is, a large proportion of the local output is Plate and Light Sheets, and it would be an easy matter to arrange for the tinning of the Plates. But hardly any steps in this direction will be taken until the question of making the Steel here is settled. This is under constant discussion now, and it is not unlikely that arrangements will be perfected to start the Jefferson Steel Company's plant and supply the Steel for local uses.

Pig Iron.—While sales show a falling off, especially on large orders, they still exceed make and consequently no increase in stocks is reported anywhere. One sale of 800 tons Gray Forge is reported at \$6.50, firm. Most sales are from 20 to 400 ton lots. Prices are firm, and while cutting is reported, there is less actual evidence of it than there was two weeks ago. Demand is evenly distributed for all grades, though No. 3 Foundry is somewhat scarce for quick delivery. Mottled is very scarce, and commands almost the same price as Gray Forge. Orders are almost entirely for prompt delivery. There is a somewhat stronger feeling among furnacemen than last week, it being recognized that after the heavy sales of last month a pause is but natural, and the steady continuance of smaller orders with pressure for prompt shipment has restored confidence.

Manufactured Material.—Outlook is still discouraging. While the output is gradually increasing, yet prices are, if anything, lower. Sales are well up to make and no increase in stocks is reported. A special demand for Light Sheets is noticeable. There is a strong feeling among local mill owners that specialties should be made, and the manufacture of Tin Plate is being discussed on this account. It has been suggested that the idle Elyton Land Company's rolling mill be converted into a Sheet mill, and an effort is being made to interest capital in this direction.

Metal Market.

Pig Tin.—There has been a large speculative movement. At least the transactions on 'change, including sales and resales, along with outside dealings, aggregate upward of 1000 tons. Prices moved almost steadily downward, particularly on prompt and near future deliveries. The former receded 0.30¢, or to 15 35¢. October delivery declined 0.15¢, being nearly the same as spot. The decline on later futures was not in proportion, and in this fact there is circumstantial evidence that the scarcity of spot Tin that was talked of a week ago existed in imagination only, and that manipulation alone has kept prompt and early deliveries at a premium over futures. Distribution has doubtless been liberal, but the records show that importations during the first half of the month amounted to no less than 1360 tons, and it is a reasonable presumption that some increase in stocks in first hands has taken place. The fall in spot prices is suggestive in that

connection. Shipments from the Straits during the first half of the month amounted to 1300 tons, including 100 tons to the United States, 580 tons to London and 625 tons to the Continent, against a total of 1450 tons during the corresponding period last year. Wednesday's market was dull, with prices at about 15.25¢ @ 15.80¢, net cash, for prompt, 15.30¢ for October, 15.25¢ for November and 15.20¢ for December delivery.

Copper.—Small lots have been more freely offered, with the effect of weakening prices a trifle, but the market is a very narrow one at present and the significance of the change in values during the week is problematical. The potent fact remains, however, that a large portion of consumers are securing Copper on old contracts at prices much below those now generally asked, and rumor has it that some are quietly taking profits on resales of a part of their stock instead of working it up. At the moment better prices than 9.65¢ for Lake Superior Ingots, 9.50¢ for Electrolytic and 9.25¢ for common casting stock, in round lots, cannot be obtained. Carload lots have been sold at only a slight advance over those prices.

The monthly statement of the Bureau of Statistics gives the following details of exports of Copper during August:

Ore—	1894. Tons.	1893. Tons.
To United Kingdom.....	.....	4,826
To Germany.....	.....	505
Totals.....	.....	5,131
Ingots, bars and old—	Pounds.	Pounds.
To United Kingdom.....	4,664,920	3,569,846
To Germany.....	2,641,849	2,667,651
To France.....	2,337,596	4,254,204
To other Europe.....	4,207,739	6,692,589
To Br. No. America.....	35,759	1,250
To Mexico.....	.....	20,407
To West Indies and Bermuda.....	.....	3,473
To other countries.....	5,000	.....
Totals.....	13,892,863	17,209,422

The movement during the first eight months of the respective years was as follows:

Ore—	1894. Tons.	1893. Tons.
To United Kingdom.....	1,606	27,429
To Germany.....	1	533
Totals.....	1,607	27,962
Ingots, bars and old—	Pounds.	Pounds.
To United Kingdom.....	47,995,426	12,258,808
To Germany.....	14,348,305	7,336,910
To France.....	11,514,001	14,154,440
To other Europe.....	36,842,061	20,020,883
To British North America.....	192,112	305,532
To Mexico.....	133,975	85,507
To West Indies and Bermuda.....	7,481	3,473
To other countries.....	6,208	33,600
Totals.....	111,039,569	55,198,653

Pig Lead.—Orders have been placed for nearly, if not quite, 1000 tons, October and November shipment from the West, at 3.10¢ laid down here or at common point. The greater portion, it is understood, went to large consumers, some of whom refused subsequent offers at the same price. Speculative bids were made of 3.12½¢ @ 3.15¢ for single carloads, delivered each month during the balance of the year, but they were ignored while the business above reported was put through. As matters stand at present the market may be quoted 3.10¢ @ 3.15¢, according to buyer, quantity of metal involved, and other conditions.

Spelter.—Nothing more than routine business, the total of which could readily be calculated, has been effected in this market. The demand continues exceedingly tame, and the only feature of interest is that sellers seem to have less stamina. At all events ordinary Western brands have been offered at

3.45¢ and a shade under for near future delivery.

Antimony.—Only routine business is passing and the demand is slow. Prices remain at about 7½¢ for Hallett's and 9½¢ for Cookson's, on the spot.

Nickel.—There is a wide range of prices. The extremes are 35¢ and 42¢. Nothing more than routine business is passing.

Tin Plate—Stock at hand this week has been well cleaned up as fast as unloaded from ship. Some went in delivery on previous contracts and not a little on new orders calling for prompt deliveries. Considerable quantities of Plates have been taken out of bonded warehouses also, and, upon the whole, the spot movement was fairly large. Charcoal Ternes, 20 x 28, are scarce, and prices for the same, as quoted, may be considered greatly nominal. The assortment is broken, apart from this, but relief is expected upon the arrival of steamers due during the next week or ten days. Orders for future shipments are being placed in a very indifferent way: Charcoal Tins: Allaway Grade, IC 14 x 20, \$4 20 @ \$4 25; IX 14 x 20, \$5 @ \$5.05; IC 20 x 28, \$8.40 @ \$8.50; IX 20 x 28, \$10 @ \$10.10; IC Melyn, &c., 14 x 20, \$4.75 @ \$4.80; IX Melyn, &c., 14 x 20, \$6 40; IC Melyn, &c., 20 x 28, \$9.50; IX Melyn, &c., 20 x 28, \$12.75; IC Lisvane, &c., 14 x 20, \$4.25; IX Lisvane, &c., 14 x 20, \$5; IC Lisvane, &c., 20 x 28, \$8.50; IX Lisvane, &c., 20 x 28, \$10. Coke Tins, Bessemer Steel, IC 14 x 20, full weight, \$4 12½ @ \$4 15; 100 lb, \$3.80; 95 lb, \$3 75; 90 lb, \$3 65; IC 20 x 28, 200 lb, \$7.80; 180 lb, \$7.50; ICW 14 x 20, 100 lb, \$3 65; 90 lb, \$3 55; IC squares, full weight, \$4.20 basis; 100 lb basis, \$3 90 basis; Siemens Steel, IC squares, full weight, \$4.35 basis; 100 lb basis, \$4 basis. Charcoal Ternes: M. F., IC 14 x 20, \$6; IC 20 x 28, \$12; Worcester, IC 14 x 20, \$4.75; IC 20 x 28, \$8 60; Dean, IC 14 x 20, \$4.10 @ \$4 15; IC 20 x 28, \$8.10 @ \$8 15; 100 lb, IC 14 x 20, \$3 90; IC 20 x 28, \$7 80; D. R. D. Grade, IC 14 x 20, \$3 90 @ \$3 95; IC 20 x 28, \$7 85 @ \$7 90; 100 lb, IC 14 x 20, \$3 85 @ \$3 90.

British Metal Market.

[Special Cable Dispatch to The Iron Age.]

LONDON, October 17, 1894.

Little movement in Pig Tin prices has taken place, and the market remains in very uncertain shape. Under the influence of some tired holders realizing cash lots went as low as £69.5/. The larger holders were waiting results and did but little. Subsequently a recovery took place on lessened offerings and good buying by consumers and dealers. Straits advices were of firm market there. At the close the market was flat, with prices at £69 10/ @ £69.12/6 for prompt, and £69.17/6 for three months' futures.

Copper has been somewhat irregular, yet without radical change. There is less pressure to sell, and improved demand from India, together with rumors of prospects of leading producers agreeing to limit production, but the market is uncertain and transactions are small. The market to-day was more active,

but easy. Merchant Bars, £41 for prompt and £41.5/ @ £41.7/6 for three months' futures. Best selected English, £44 @ £44.10/.

The Tin Plate market has been quiet and easy. Transactions at the quarterly meetings were limited to small lots at bottom prices. Sellers refuse to make further concession, but merchants are bearing the market. Sellers are reserved owing to reduction in stocks, but their position is weakened by the fact that several large works are starting up. The Clyne and the Blaina works have resumed. Swansea quotations are as follows:

Bessemer Cokes, IC.....10/ @
Siemens Cokes, IC.....10/3 @
J. B. Steel Cokes, IC.....10/ @
Dean Ternes, 20 x 28.....20/ @
Charcoals, IC.....11/ up.

Large orders for Black Plate have been placed at late prices.

Pig Lead is in very fair demand and prices steady at £9.17/6 for Soft Spanish.

Spelter has met with rather slow sale. Prices are easy at £15.2/6 @ £15.5/ for ordinary Silesian.

Iron is without important change. Warrants quoted to-day at 42/5 @ 42/6 for Scotch. 35/4½ @ 35/6 for Cleveland and 43/6 for Hematite.

The Bureau of Statistics of the Treasury Department reports the exports of breadstuffs, provisions, mineral oils and cotton from the United States during September as compared with similar exports during the same month of last year as follows:

Breadstuffs—			
September	\$3,646,507	Dec..	\$9,506,379
Nine months.....	\$9,980,095	Dec..	\$3,533,893
Provisions—			
September.....	11,425,015	Inc..	131,720
Nine months.....	137,172,376	Inc..	19,381,076
Mineral oils—			
September.....	3,466,758	Dec..	90,71
Nine months.....	29,085,278	Dec..	1,571,658
Cotton—			
September.....	6,163,499	Dec..	654,748

The annual report of the mine inspector of Houghton County, Mich., for the year ending October 1, 1894, shows that during the year 7348 men were employed in the great copper mines along the shores of the Portage Lake, and that of this number only 22 were killed by accidents while at work.

The designs of C. Hildenbrand, consulting engineer of John A. Roebling's Sons & Co., have been chosen for the strengthening and enlarging of the Cincinnati suspension bridge, one of the creations of the famous engineer, Roebling.

Forge Pig Iron is a little stronger in the Eastern Pennsylvania markets, but Foundry Irons are pretty dull throughout the country, with some local evidences of weakness. Chicago has been making some moderate sales into Canada.

*There has been quite a heavy movement in Tin, at declining prices, and some activity in Lead. In Copper there are evidences that consumers are feeding the market with stock cheaply bought, thus taking a profit on purchases made some time since.

The Lehigh Valley Railroad has adopted 45-foot rails as the standard.

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HARDWARE.

Condition of Trade.

BUSINESS is moving along without special change from the conditions which have existed the past few weeks. Orders are large in number and carefully assorted, but the aggregate in dollars and cents is not in all cases satisfactory owing to the comparatively small quantities in which purchases are made and also the lower prices which prevail on many goods. The practice of the trade in ordering in much smaller lots than has been usual, even though orders are more frequent, adds not a little to the cost and trouble of doing business, as business of this character often keeps a concern as fully occupied as it would be if orders were for usual quantities. It is also a matter of frequent remark that in order to keep business up to its present standard a good deal of special effort is necessary, and travelers refer to the hard work which they have to do in securing orders. Reports from the retail trade indicate a very general though not very marked improvement in general business conditions. While the trade at the present time does not come up to the more sanguine expectations which were entertained there is a general feeling that business is steadily improving and that a good trade may be anticipated before very long.

Chicago.

(By Telegraph.)

The Shelf Hardware jobbers report a considerably better movement than in September. Some jobbers report that the first two weeks of this month have been with them the best of the year. Quite a number of new ventures are reported, and sales of new stocks are breaking the monotony of continuously entering small orders. The small orders, however, are still a leading feature of the business, and the invoices present a remarkable array of writing and figuring for the small amount footed up at the end. Trade is improving in some sections of the West which were regarded as almost hopeless. Kansas is doing better than had been expected, and other Western States are coming up in much better shape. Orders are being steadily received from the silver States and from other mining sections which have so long been depressed. Heavy Hardware has had an exceedingly good

week. Orders are still small, but they are plentiful. This branch of business has experienced considerable benefit recently from the large purchases of lumbermen's supplies for lumber camps during the coming winter. Carriage manufacturers are still entering contracts for their season's supplies. Wagon builders, however, appear to be doing very little at present. It is expected that their trade will come forward later, and perhaps be better for the present dullness.

St. Louis.

(By Telegraph.)

There is no cessation to the demand for Hardware. The weather conditions are favorable and the present month promises to be a more than satisfactory one. The trade is just now particularly interested in the outcome of the Barb Wire combination. The chances are favorable to a continuance of the present agreement, and if this proves to be true steady prices are anticipated for the balance of the year, with a possibility of an advance as soon as the spring trade opens. Wire Nails are still unsettled, notwithstanding the reported agreement among the Wire Nail manufacturers. Country dealers are increasing their orders and stocks in retailers' hands are in better shape than they have been for some time. Plain Wires are selling very low. Prices in general do not as yet show any signs of improvement.

Louisville.

W. B. BELKNAP & Co.—There is a fair jobbing business still doing, which is reasonably satisfactory to most people concerned. Inasmuch as there has been no overbuying in any quarter nor any fictitious advances which are apt to be based thereon, we have no fears of reaction. Prices stand upon a firm, solid, low basis, and are not likely to be disturbed.

Small goods, winter supplies, household furnishings, Tools, Guns and Ammunition have had more than their proportion of the business, and are still in good demand. Staples are rather quiet owing to the confessed softening of Billets at Pittsburgh, although Wire Nails are in good demand and well upheld, and factories claim to be full of business for the current month at least. Prices on the finished products generally are not far from the lowest ever reached even when Billets were \$1.50 lower than at present.

We think that the condition of the Steel market would be much improved if the Steel Rail combination were to recede from its lofty scale of prices for standard sections, and let the market have its free course or at least fix the prices somewhere in keeping with the price of Bessemer Pig and Billets. To see quotations of standard Rails \$25 to \$26, when Billets are in

the neighborhood of \$16, convinces one at once of the unnatural and unhealthy difference artificially maintained. Railroad buyers certainly, in times like these, are not going to pay a premium of 50 per cent. for Rails if they can help it, saddling forever an additional fixed charge upon the road. With all the aversion to extension, construction, &c., we venture to say that the railroads would be free purchasers at what they would feel to be a fair price for Rails. Smaller sections, 12 and 16 pounds, are much cheaper than the larger standard sections, which can be produced very much lower, as a matter of course, and this is because the lighter sections are bought and sold in open market. It seems absurd that a coal mine can buy its little mule car tracks for less than the great railroad 70 to 90 pound sections.

The country at large is interested in this, and it is attracting attention in the newspapers aside from the market reports in the trade journals. With railroad buying once begun the whole market would take tone and buying commence on a more liberal scale.

New Orleans.

A. BALDWIN & Co.—Business shows considerable falling off in the past week, owing principally to the extremely low prices of the leading staples, cotton and sugar. This has created somewhat of a demoralization, and the merchants seem to be awaiting further developments. Orders, although coming in freely, are not quite as large as during the past month. There is a good deal of uncertainty as to what conditions will prevail in the next 60 days. This uncertainty is having considerable effect on trade at the present time. There is great activity in the building line, owing to the magnificent weather, and this part of our business has not fallen off to the same extent that is manifest in other lines.

Baltimore.

CARLIN & FULTON.—While in railroad parlance there is considerable tonnage moving, we cannot say that the net earnings are just now as large as we would wish them.

The low prices at which everything is sold, from Axes to Barrows, from Nails to Needles, require about double the consumption of goods to even up the sales with former years.

The lull which happens every year about this time in the orders from the cotton States is emphasized this season by the wonderfully low prices for cotton, and as the planter is holding back his crop for a better market, the storekeeper is hampered in both his collections and sales. The immense crop will prevent, no doubt, the realization of the farmers' hopes for much of an advance, and its comparatively low cost of production should make some amends for the selling price.

The country has generally worked down to a lower base in all lines of trade, and with the immense daily necessities and consumption which goes on we are all doing perhaps more busi-

ness than the diminished figures of sales would indicate.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—Since our last report there has been little of special character to note.

The danger from further loss by timber and prairie fires soon afterward passed by and the work of rebuilding in the burned districts has been going on vigorously.

As stated in our former letter, the trade of St. Paul has not been affected by the fire losses to such an extent as to be noticeable in the volume of business and with the activities required in the reconstruction of affairs in the sections that were visited by the fires, things will now move along in about the usual order, in so far as they affect the centers of trade. The territory burned over and the property destroyed, while large considered alone, are small in the aggregate, contrasted with the vast territory and amount of wealth that center here.

Business has maintained its volume and uniformity fairly well. Jobbers are finding it generally up to expectations.

Of collections the same is to be said, and there is no doubt both the wholesale and retail trade will be in better shape at the end of the season, both as to stocks on hand and outstanding bills and accounts receivable, as well as liabilities, than for years past.

Probably the most disappointment among Hardware jobbers is felt in the fact that the expected stiffening of prices by manufacturers has not yet materialized and cannot now affect this season's trade.

San Francisco.

MILLER, SLOSS & SCOTT.—We have again to report the continuation of the same general increase in trade that we have noted for some time past. This increase as a general thing does not seem to be confined to any particular class of goods. In this regard we may mention the exception of trade with manufacturing concerns in our city. Although we have not heard of any orders that they have placed, we have had numerous inquiries for fairly large quantities. This seems to indicate a beginning of a revival of improvements and a desire to make long needed repairs.

While collections as a whole have continued to be satisfactory, there has recently been reported quite a number of failures, among which we find some involving a considerable amount of money. This is not alarming, however, as we usually expect after harvest to find failures more numerous than at any other season.

Omaha.

LEE-CLARKE-ANDRESEN HARDWARE COMPANY.—Cooler weather has produced a somewhat reviving effect on the general volume of business. Seasonable goods are in quite active demand, and notwithstanding the drawback in the way of shortage of crops it is a matter of surprise that the total volume of business aggregates such satisfactory proportions.

The business with South Dakota is specially encouraging. In that section the crops have proved entirely satisfactory, while the extensive mining interests exhibit every evidence of prosperity.

We have to note also a very fair trade from Colorado, Wyoming and

Utah. Orders are coming forward quite freely from all these sections, as well as from Eastern Nebraska, so that the total volume of business is anything but discouraging.

Very few orders are placed in anticipation of trade, but are almost exclusively confined to immediate and pressing wants.

Stocks of goods were never lighter throughout the territory tributary to this market than they are at this time, and country dealers find it necessary to use the mails constantly to replenish empty shelves.

Collections continue fair in an all round way, considering the general situation.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The conditions of the jobbing Hardware trade are practically unchanged since the date of our last letter, nor can we see any reason why the country may not look into the future hopefully and with confidence.

The slow growth of industrial improvement of the manufacturing industries located in our own city remains unchanged, so far as outward signs indicate. While there remain a large number of unemployed in our manufacturing districts, there are visible signs of improvement over six months ago, which is refreshing, but when we compare these districts with two years ago this fall "comparison still remains odious," notwithstanding the fact that one may be called by a few moneyed men of leisure, or a corps of politicians or hide bound partisans, a croaker for whispering in bated breath that the hardships experienced by many thousands during the last 18 months have not entirely disappeared, and although the statistics of production show a gradual and a substantial improvement, we are a long distance off from the highest point. We are glad to see the pig and bar iron shipments and large productions over one year ago, which indicate a return to prosperity.

We do not agree with many of the circulated reports written from the desks of many employed sub-editors that the manufacturing industries show the signs of former activity and prosperity, nor will the former activity be seen so long as the purchasing power is so far below any former minimum of prices or values.

Whether the market value be in the price of wheat, corn, or other agricultural products; whether it be in the selling price of cotton, all of which are abnormally low, or whether it be in the reduced wages of the mechanic or the wages of the factory wage earner, it is a mistaken theory to suppose these reduced values are recompensed by the slight decline in the selling price of merchandise.

One can wonderfully economize in the necessities of life for a time, but it is a question whether life is worth living to be sustained only in a continuous buying of one loaf of bread or one pound of meat when four loaves or four pounds would be relished, or indeed needed, in order to sustain health.

Carefully worded editorials, which have become so familiar in some of our daily papers, given to us for digestion at the breakfast table, are but a mask over the real cause. For instance, the writer read from his paper this morning: "Wheat and corn prices have declined still further 2 cents per bushel, reaching the lowest point on record, owing to the absence of any active demand for export. Cotton has made a further decline of another 1/4

cent per pound, owing to the large stocks abroad and owing to curtailed orders for export."

Why all this studied effort to throw the responsibility on export trade? If four loaves of bread *per capita* of the wage earner instead of one could be made possible, and if a semi-annual purchase of clothing could be made possible with each man, woman and child of the wage earner; if a few of the luxuries in the shape of something beyond the actual necessities of life were made possible, would these disguised and masked forms of editorials be necessary?

We do not want to reach the conditions that Mr. Gladstone or Mr. Chamberlain has recently stated, that half of all the wage earners of England are destined to the workhouse or poorhouse when no longer able to work.

We can well digest the fact that one-tenth, or one fourth, or one-half, or a full millionaire, or any one living upon their capital safely invested, or Congressmen, or any other favored or successful politician, either Government, State or city, with an established salary, can be benefited by a reduction in wages of the wage earner, by his savings ground out of the farmer in the price of his wheat, corn or cotton, or the wage earner in the reduced wages, but for the wage earner, the wheat grower, the cotton grower, the merchant or the manufacturer, no, for with diminished earnings the decreased price of product is dearly purchased.

This is plainly seen by penetrating the manufacturing districts, in the haggard countenances of some, or else the reckless indifference of others less sympathetic or conscientious, in the cheaply dressed or threadbare clothing of the former unmarked citizen.

We are sorry we cannot agree with Mr. Wilson of the Ways and Means Committee, who, it is said, recently stated that he feared the quick revival of trade indicated throughout the country might again quickly lead into the former extravagance.

We see but little danger of this with the present price of agricultural products, or the low price of the wage earner, which must continue when all products have more than home competition to contend against.

When we read that one large dry goods and notion house of our city has received over 2000 cases since the new tariff went into operation, we naturally stop to consider whether we would not be better off if these goods were purchased in our own country, thus giving work to the unemployed, and thus keeping the gold within our own shores.

But this is a broad question which we are not called upon to discuss, nor can it well be done without being misunderstood. No better proof of this can be given than by referring to our representatives in Congress, when the same political party, either one side or the other, grasp so vigorously when their own constituents at home were directly interested.

Collections are not up to the standard we had looked for at this date. There is evidence of the retailer giving credit on many of his sales.

The reports of failures in the Hardware line are less numerous than one year ago, showing laudable caution in trade, as well as evidence of many of the unsafe persons in trade having been weeded out.

THE AMERICAN SAFETY LAMP & MINE SUPPLY COMPANY, Scranton, Pa., expect to put on the market shortly a miners' Head Lamp made of aluminum. The Lamp will be entirely seamless, a feature which will, it is thought, insure for it a ready sale.

Notes on Prices.

Wire Nails.—There is little change in the market since last week. Quotations of the mills are on the basis of \$1 for carload lots at mill, and this price is quite firmly adhered to except in special cases where a slight concession is deemed necessary. It is rumored that there have been some quotations for Nails, delivered, at a figure which will net the mills less than the current price. There is a good deal of irregularity in the price at which Wire Nails are sold by jobbing houses, some of the prominent ones, in the West especially, selling freely at \$1.10 to \$1.15. The market is not regarded as being in a settled state, and buyers are watching it carefully to see whether or not the manufacturers will succeed in the efforts to which we have before referred to eliminate disturbing influences.

Chicago, by Telegraph.—The condition of business shows little change from that reported last week. Inquiries are considerably better, but the volume of business can hardly be said to have gained anything. The association manufacturers are adhering closely to \$1 at mill in their quotations, and buyers appear to be waiting to see whether this price will be firmly maintained before placing their orders. Jobbers are selling small lots from stock at \$1.10, and show no disposition to advance this price, although they will be unable to replenish their stock at the same cost if manufacturers maintain their present attitude. The situation is, therefore, interesting from the standpoint of jobbers.

Cut Nails.—There is a fair but not heavy movement and prices are without material change. They are on the basis of 90 cents, 60-cent average, for carload lots on dock, New York. Small lots from store in New York are held at \$1.05 to \$1.10 on a 60-cent average.

Chicago, by Telegraph.—Local manufacturers report plenty of business now coming in, but only of a character to supply the immediate wants of merchants. Nobody seems disposed to enter contracts for future delivery. Prices for factory shipment are 90 cents for 60-cent average, Chicago delivery. Small lots from jobbers' stocks are quoted at \$1.05.

Barb Wire.—There is little doing in Barb Wire and prices are without change, Four-Point Galvanized being quoted as follows, in carload lots, delivered at the points named: Pittsburgh, \$2 to \$2.05; Cleveland, \$2.05 to \$2.10; Cincinnati, Allentown, Chicago or New York, \$2.15 to \$2.20. Negotiations between manufacturers with a view to consummating arrangements which have been under consideration for some time still continue, and are understood to be progressing favorably.

Chicago, by Telegraph.—Manufacturers

are in receipt of fair orders from a few sections of the West, but generally speaking, trade is quite disappointing. Jobbers are also doing only a light business. Small lots of Galvanized are quoted at \$2.25 from stock, and \$2 15 from factory.

Screen Wire Cloth.—The manufacturers of Screen Wire Cloth have recently determined upon prices for the coming season. They are based on the quotation of \$1.45 per 100 feet for small lots, with concessions for quantities similar to those which were made last season, but giving a slightly lower extreme price.

Gardner Steel Sash Lock.—The Gardner Indestructible Sash Lock was described in *The Iron Age*, 4th inst. It is manufactured by the Gardner Sash Balance Company, Chicago, Ill. The Lock is sold from the following list, which is subject to a discount to the trade of 70 per cent.:

No.	Size No. 2.	Per doz.
400,	Plain Iron Bronzed, Steel Latch and Keeper.	\$1.30
401,	Plain Iron Polished and Lacquered, Steel Latch and Keeper	1.50
402,	Plain Iron Polished, Japan Bronze, Steel Latch and Keeper	2.00
403,	Plain Iron Polished, Electro Bronze, Steel Latch and Keeper	3.60
404,	Plain Iron Polished, Old Copper Finish, Steel Latch and Keeper	4.00
405,	Plain Iron Polished, Bower-Barffed, Steel Latch and Keeper	5.00
406,	Genuine Bronze Metal Polished.	7.00
407,	Genuine Bronze Metal Polished, Antique Copper Finish.	7.50
408,	Genuine Bronze Metal Polished, Antique Silver Finish.	10.00
Size No. 3.		
350,	Plain Iron Bronzed, Steel Latch and Keeper.	1.60
351,	Plain Iron Polished and Lacquered, Steel Latch and Keeper.	2.00
352,	Plain Iron Polished, Japan Bronze, Steel Latch and Keeper.	2.50
353,	Plain Iron Polished, Electro Bronze, Steel Latch and Keeper.	4.50
354,	Plain Iron Polished, Old Copper Finish, Steel Latch and Keeper	5.00
355,	Plain Iron Polished, Bower-Barffed, Steel Latch and Keeper	6.00
356,	Genuine Bronze Metal Polished.	8.00
357,	Genuine Bronze Metal Polished, Antique Copper Finish.	9.00
358,	Genuine Bronze Metal Polished, Antique Silver Finish.	11.00
Size No. 4.		
300,	Plain Iron Bronzed, Steel Latch and Keeper.	2.40
301,	Plain Iron Polished and Lacquered, Steel Latch and Keeper	2.80
302,	Plain Iron Polished, Japan Bronze, Steel Latch and Keeper	5.00
303,	Plain Iron Polished, Electro Bronze, Steel Latch and Keeper	6.00
304,	Plain Iron Polished, Old Copper Finish, Steel Latch and Keeper	6.50
305,	Plain Iron Polished, Bower-Barffed, Steel Latch and Keeper	7.00
306,	Genuine Bronze Metal Polished.	12.00
307,	Genuine Bronze Metal Polished, Antique Copper Finish.	13.50
308,	Genuine Bronze Metal Polished, Antique Silver Finish.	15.00

Taylor Battery.—The Taylor Battery, manufactured by the Taylor Battery Company, 51 Dey street, New York, an illustrated description of which was given in our issue October 11,

1894, is sold at a discount of 30 per cent. from the following list:

Standard Cell, in 6 x 8 glass jar, complete, each.	\$2.00
Standard Cell, without glass jar, each.	1.75
Standard Zincs, each.	.25
Carbon, sets.	1.00
Cup, each.	.35
Zinc Hangers.	.25
Glass Jars, 6 x 8, weight 2½ pounds.	.25
Battery Hydrometer, shows density of solutions.	.50
Taylor's Battery Powder, 10-gallon packages.	1.00
Taylor's Battery Powder, 50-gallon packages.	4.00

Aluminum Ware.—In addition to their regular list, the Illinois Pure Aluminum Company, Lemont, Ill., have issued the following list of new goods. It is subject to a discount of 15 per cent.:

Berlin Sauce Pans.	
No. 1, per dozen, \$13; No. 2, \$15; No. 3, \$18; No. 5, \$22; No. 7, \$26.	
Berlin Kettles.	
No. 1, per dozen, \$13; No. 2, \$15; No. 3, \$18; No. 5, \$22; No. 7, \$26.	
Convex S. Pans.	
No. 2, per dozen, \$14; No. 3, \$16; No. \$19.50; No. 6, \$24; No. 8, \$28.	
Convex Kettles.	
No. 2, per dozen, \$14; No. 3, \$16; No. 4, \$19.50; No. 6, \$24; No. 8, \$28.	
Convex Cook Pots.	
No. 1, per dozen, \$13; No. 2, \$15; No. 3, \$18; No. 5, \$22; No. 7, \$26.	
Child's Chambers, per dozen.	\$14.75
Covers, per dozen.	4.70
Adults' " " per dozen.	20.40
Covers, per dozen.	6.00
Cuspidors, per dozen.	15.00
Cups and Saucers, per dozen.	9.00
Muffin Covers.	
6-inch, per dozen, \$10; 7-inch, \$12; 8-inch, \$17.	
Measures.	
1-gallon, per dozen, \$18; ½-gallon, \$13.30; 1-quart, \$8.70; 1-pint, \$5.30; ½-pint, \$3.30.	
Bevel Cups.	
½-pint, per dozen, \$2.20; ¾ pint, \$2.65; 1-pint, \$3.20; 1½-pint, \$3.60.	
Funnels.	
1-quart, No. 4, per dozen, \$7.50; 2-quart, No. 5, \$9.50; 4-quart, No. 6, \$12.	
Individual Soup Tureen.	
1-pint, per dozen, \$13.	
Miners' Cups.	
1-quart, per dozen, \$6.30; 2-quart, \$9.30.	
Fry Pan.	
6 inch, per dozen, \$6.50.	
Spun Tea Kettles.	
4-quart, each, \$3; 5-quart, \$3.25; 6-quart, \$3.50; 7-quart, \$3.75; 8 quart, \$4.	
Water Pitchers.	
3-pint, per dozen, \$31.50; 4-pint, \$32; 5-pint, \$32.50; 6-pint, \$33; 7-pint, \$33.50; 8-pint, \$34.	
Soup Tureen.	
1½ gallon, each, \$3.75.	
Oyster Pans, per dozen.	15.00
Spittoons, per dozen.	14.00

Butt Gauge.—Reeves' Butt, Mortise and Marking Gauge, illustrated in this issue, is sold by C. E. Jennings & Co., 97 Chambers street, New York, at \$7 per dozen, less 33½ per cent. discount.

Service Stopping Machine.—This article is put on the market by E. Lothar Schmitz, 92 Reade street, New York, for whom Hermann Boker & Co., 101 Duane street, New York, are agents. A description of it was given in our

issue 27th ult. The Stropping Machine is sold to the trade at \$15 per dozen, net.

Gun Wads.—Under date October 15, Union Metallic Cartridge Company, Bridgeport, Conn., and Winchester Repeating Arms Company, New Haven, Conn., announce a new list on Gun Wads, which is subject to the same discount as before. We print below that issued by Union Metallic Cartridge Company, the discount being 20 per cent. and an additional 2 per cent. for cash:

Per 1000.....	Gauge	4	5	6	7	8	9&10	11&12	13to16	17to20
Card Board, plain, 3 thicknesses.....				\$0.34	\$0.26	\$0.26	\$0.22	\$0.18	\$0.18	\$0.18
Card Board, printed, "B" thickness only, 40-1000 inch thick, with shot numbers and special names.....				.40	.32	.32	.28	.24	.24	.24
Black Edge, regular.....	\$2.00	\$1.30	1.20	.80	.80	.70	.60	.60	.60	.60
1/4-inch thick.....					1.20	1.05	.90	....	....	....
3/8-inch thick.....					3.50	2.75	2.50	....	....	....
Pink Edge, regular.....	2.75	2.25	1.75	1.50	1.50	1.25	1.00	1.00	1.00	1.00
1/4-inch thick.....					1.75	1.50	1.25	....	....	....
White Felt, 3/8-inch thick.....	7.00	6.00	5.00	4.00	4.00	3.00	2.75	2.75	2.75	2.75
Express, 3/8-inch thick, White Felt.....						3.00	2.75	....	....	....
1/2 inch thick, White Felt.....						5.00	4.25	....	....	....
Salmon, regular Black Edge thickness.....				.80	.80	.70	.60	.60	.60	.60
1/4-inch thick.....					1.20	1.05	.90	.90	....	....
3/8 inch thick.....					3.50	2.75	2.50	2.50	....	....
Trap (field).....					1.50	1.25	1.00	1.00	....	....
Shot Felt.....					.75	.65	.55	.55	....	....

H. Chapin's Son.—The following revised discount sheet has been issued under date October 1, by H. Chapin's Son, Pine Meadow, Conn. It relates to his catalogue of 1890. Terms 30 days or 2 per cent. discount for cash in ten days:

	Discount Per cent.
Boxwood Rules.....	.80 and 10 and 10
Ivory ".....	.50 and 10
Miscellaneous Rules.....	.60 and 10
Bench Planes, Common "Pearce".....	.60
" " Extra and Premium.....	.55
" " with English Irons instead of American.....	.25
Ship Planes.....	.50
Miscellaneous Planes.....	.50
Bench Planes, Apple, Box and Rosewood.....	.25
Carriage Makers' Tools.....	.25
Molding Planes.....	.50
Grooving Plows.....	.50
Gauges.....	.60 and 10
" Scholl's Patent.....	.60 and 10
" Marden's Patent, for Door Hangers.....	.50 and 10
Plumbs and Levels—Non-Adjustable.....	.75 and 10 and 10
Plumbs and Levels—Patent Adjustable.....	.75 and 10 and 10
Plumbs and Levels—Chapin's Imp. Brass Cornered.....	.25 and 10
Pocket Levels.....	.70 and 10
Level Glasses.....	.70 and 10
Hand Screws.....	.40 and 10
Turning Saw Frames.....	.30 and 10
" " " and Saws.....	.30 and 10
Chisel Handles.....	.65 and 10
File and Awl Handles.....	.65 and 10
Plane Handles, make price No. 1 Jack Handle 42c.....	.40 and 10
Plane Handles, make price No. 3 Jointer Handle 75c.....	.40 and 10
Saw Handles, make price No. 5 Saw Handle \$1.20.....	.40 and 10
Saw Handles, make price No. 6 Saw Handle \$1.40.....	.40 and 10
Door Stops, Birch only.....	.60 and 10
" " Rubber Tipped.....	.60 and 10
Spoke Shaves, Chapin's Improved.....	.50 and 10
Box Scrapers.....	.50 and 10
Plane Irons.....	.30 and 10
Plane Stops.....	.20

Sash Weights.—The Sash Weight market is in an unsatisfactory condition

and prices are low and very irregular. Some manufacturers advise us that it is necessary to make large concessions from what they consider a fair price in order to secure business and the result is that current prices are unprofitable. There is a wide range of prices quoted by different manufacturers. A fairly representative price is perhaps \$15 per ton, f.o.b. factory, for lots of 1 ton or more, smaller lots being held at \$16. These prices are, however, shaded, and considerably lower prices are made by some foundries, the matter of price being de-

lowed the gradual increase in the number of Glass factories which have gone into operation, which would convey the idea that the decrease in prices has been contingent upon the increased output of Glass. Factories equivalent to something over one-half of the capacity of the country are now making Glass. Prominent manufacturers express the opinion that prices have decreased more than the situation would warrant, and consider that the cause is largely attributable to a lack of confidence among the trade. It is reported that Glass has been sold in Chicago in car lots at a discount of 90 and 10 per cent., with the usual discount allowed for cash. Pittsburgh advises state that 88 per cent. discount for single and 90 per cent. discount for double strength Glass are still quoted, and that there is a disposition to make concessions by allowing these discounts for smaller quantities than lots of 3000 to 5000 boxes. New York quotations are 85 and 10 per cent. discount for either single or double strength Glass. Under date of October 1 a Cleveland house quotes 85 and 15 per cent. discount for single and 85 and 20 per cent. discount for double strength Glass, with freight allowed on ten boxes or over. These variations in quotations indicate the unsatisfactory condition of the Glass market.

Manufacturers' Association of Kings and Queens Counties.

THIS ASSOCIATION held its regular monthly business meeting, Monday evening, October 15, at its rooms in the Pouch Mansion, Brooklyn. There was present the largest attendance since the founding of the organization last February. A number of interesting reports were made by chairmen of standing committees, and the names of 16 new members were reported. The treasurer's report in detail showed every outstanding obligation paid to date and a balance to the association's credit in bank of about \$5000.

The committee having in charge the matter of urging on the city administration the cleaning of the Wallabout and Gowanus canals made a report indicating that something might be accomplished in these directions.

The special Committee on Insurance submitted a very comprehensive report regarding insurance on manufacturing plants in Kings and Queens counties, forcibly directing attention to what from year to year is continually putting on manufacturing interests onerous and oppressive burdens. It is proposed to organize a mutual fire insurance association for the benefit of the members under the laws of New York State, with a working capital of \$200,000. The report was received and ordered printed together with some arguments and remarks re-

termined to some extent by the quality of the goods. The condition of the market is referred to in the following terms by a well-known Eastern manufacturer:

Prices continue at ruinously low prices, or, to be more exact, Sash Weights are being sold to-day at from \$1 to \$3 per ton less than the actual cost of manufacturing. Prospects for the immediate future are not encouraging. There is still a large stock on hand, which the manufacturers seem anxious to dispose of, and there is also a pretty general feeling among manufacturers in all lines that we are only at the beginning of an era of low values, and that the wage scale and prices of raw material will be lowered to conform to the present prices of manufactured goods. Manufacturers must have some relief soon, as the present conditions are simply a butchery of their resources and cannot continue long.

Horse Clipping Machines.—We give below the list prices on Clipping Machines manufactured by the Gillette Clipping Machine Company, 201 East Twenty-third street, New York. An illustrated description of the Featherweight Clipper appeared in our last issue. The prices given are subject to a discount to the trade of 20 per cent. and an additional 5 per cent. for cash:

Model E, Featherweight Clipper.....	Each. \$35.00
" D, Champion.....	50.00
Power Yoke Machine.....	75.00
Bicycle, Cyclone.....	75.00

Glass.—The condition of the American Glass market remains unchanged, unless it is in the continued weakening of prices, as demand continues limited. This condition, it is noticed, has fol-

lating to the enterprise, the same to be mailed to each member for his careful consideration.

The business of the association was rapidly disposed of in an hour, so that members, the majority of whom scarcely knew each other as yet, could under the inspiring influence of an admirable collation, provided by the Entertainment Committee, become better acquainted. The entire edifice was brilliantly lighted by electricity and open for inspection. Mayor Schieren and several other invited guests were present. The occasion was pleasantly informal and was very much enjoyed by the association. The business meeting was adjourned subject to the call of the chair, with the understanding that a special meeting would be called in about a week to carefully consider the advisability of organizing a mutual insurance company.

Ohio Hardware Association.

A MEETING of Hardware merchants, for the purpose of forming a Hardware association in Ohio, was held at the Neil House, Columbus, October 10. More than half the counties of the State were represented either by letter or in person, and it was decided to organize at once under the name of the Ohio Hardware Association. The objects of the organization are indicated in the following preamble and resolutions, which were adopted:

At a preliminary meeting of Hardware dealers, held at Columbus, Ohio, on the above date, an organization was perfected, called "The Ohio Hardware Association."

The need of organized effort to protect ourselves from inroads of manufacturers and jobbers and to promote a general feeling of confidence is fully recognized.

Resolved, That we demand of manufacturers and jobbers that they confine the sale of their wares to regular dealers, and that each and every member of this association pledge himself to use all reasonable efforts to enforce this demand.

Resolved, That if any manufacturer or jobber furnish goods to any one not regularly engaged in the retail trade, the dealers affected shall report the same to the secretary, with affidavits or other proper proofs. The secretary shall then correspond with the offending manufacturer or jobber, and endeavor to adjust the matter, and in the event of failure to so adjust a complaint, where the evidence is conclusive, the secretary shall report the facts in the case to the members of the association.

Resolved, That a cordial invitation is hereby extended to all regular and legitimate Hardware dealers to join with us in this association, and that they send to the secretary the amount of dues for one year, and receive their certificate of membership.

As showing the scope of the association and the manner in which it is organized, we give below the constitution and by-laws which were also adopted by the meeting:

CONSTITUTION.

ARTICLE I.

SECTION 1. The title of this organization shall be "THE OHIO HARDWARE ASSOCIATION."

SEC. 2. The object of this Association shall be to promote the interests of and secure the friendly co-operation of Hardware dealers.

ARTICLE II.

QUALIFICATION FOR MEMBERSHIP.

Any person or firm who is engaged in the Hardware business, is in good standing, and carrying a general assortment of stock, may become a member of this Association by subscribing to the Constitution and paying the annual dues prescribed by By-Laws.

ARTICLE III.

OFFICERS.

The officers shall consist of a President, a Vice-President, a Secretary and a Treasurer, which officers, with two other members of the Association, are the "Executive Committee."

ARTICLE IV.

ELECTION AND DUTIES OF OFFICERS.

SECTION 1. The President, Vice-President, Secretary and Treasurer, and the two other members of the Executive Committee, shall be elected annually, by ballot, each firm to have one vote.

SEC. 2. In case of a vacancy in any of the offices of this Association the same shall be filled by appointment by the President, until the next annual meeting.

SEC. 3. It shall be the duty of the President, or in case of his inability to serve, of the Vice-President, to exercise supervisory control over the affairs of the Association, and to carry out and enforce all measures adopted by the Association calculated to improve the condition of the Hardware business.

ARTICLE V.

MEETINGS.

The regular meeting of this Association shall be held annually, on the second Wednesday of February, or as often as may be designated by the Association. The Executive Committee is subject to the call of the President.

ARTICLE VI.

AMENDMENTS.

Amendments to the Constitution may be made at any regular meeting, by the vote of at least two-thirds of the members present. Thirty days' notice shall be given to the members of any proposed change in the Constitution or By-Laws.

ARTICLE VII.

AUDITING COMMITTEE.

An Auditing Committee of three shall be appointed the first day of each annual meeting, which shall examine the books of the Treasurer and report their condition to the Association.

BY-LAWS.

SECTION 1. The admission fee to membership shall be \$3.00, in advance, which fee shall cover all dues for the first year. Each firm shall pay for current expenses thereafter \$3.00 annually; payable at regular meeting.

SEC. 2. Ten members at any meeting shall constitute a quorum.

SEC. 3. Each firm shall have one vote.

The following officers were chosen:

President.

T. J. MORRIS, the W. K. Boone Company, Lima.

Vice-President.

F. M. BASHORE, Paulding.

Secretary and Treasurer.

THEODORE BUTLER, the Standard Hardware Company, Akron.

Executive Committee.

J. H. KAUCHE, Van Wert.

F. HABERMAN, Marion.

The association starts out under favorable auspices, and it is expected that it will have the general and enthusiastic support of the trade throughout the State.

Reading Hardware Exchange.

A ORGANIZATION of the leading Hardware houses of Reading, Pa., is in successful operation, and being of rather recent origin, illustrates the tendency of the trade to form associations for their protection and the advancement of their mutual interests. Three objects are intended to be accomplished by this association: 1, Promoting the acquaintance of the members and the inducing of a friendly feeling; 2, agreement in regard to the prices at which some of the leading staple goods shall be sold, and, 3, the joint purchase of goods. In all of these respects the association is referred to as a marked success. While there is naturally active competition among the members, business is conducted on friendly lines and with a good understanding. The practical effect of the action of the association in regard to prices is very satisfactory, and unreasonable and unprofitable competition has been checked. This department of the work of the exchange is under the care of one of the members, who is designated the secretary of prices. The members of the association also find it advantageous to unite in their purchases of leading goods, thus being enabled to obtain better prices from manufacturers than would otherwise be the case. Such purchases are made in the name of one firm, who distribute the goods to the other members. This feature of the association is referred to as working admirably and being very advantageous.

The officers of the exchange are as follows: D. D. LERCH of Bright & Lerch, president; GEORGE BARD of Bard, Reber & Co., secretary and treasurer, and AARON STEIN of the Stichter Hardware Company, secretary of prices.

A joint meeting of the exchange with the leading Hardware merchants of Lancaster, Pa., was held September 25. This gathering is referred to as having been a very enjoyable affair, and careful consideration was given to the work of the association and some measures taken looking to its extension so as to include other cities. We are advised that the question of credits has not yet been taken up, but it is probable that the association will adopt

measures which will be for their mutual protection in this regard.

Stephens & Co.

STEPHENS & CO., Riverton, Conn., manufacturers of United States Standard Boxwood and Ivory Rules, are one of the oldest concerns in this line in the country, having been established in 1853 by L. C. Stephens & Co., who were succeeded by D. H. Stephens, son of the original proprietor, in 1861, who has been connected with the concern since their inception, and has designed and made the patterns for nearly all the machinery used by them in the manufacture of Rules. These machines were not only designed on the premises, but built there also, the plant including a well equipped machine shop, in which the work has been done. The proprietor has for years devoted a great deal of time to inventing and devising special machines to be used in this branch of manufacture, and from year to year this product has been added, thus keeping pace with the growth of business. There is probably no other manufacturing establishment of similar size that in its mechanical equipment so largely represents the ideas and handiwork of one man. The third generation of the Stephens family, in the person of Frank L. Stephens, who has had a thoroughly practical training in details and management, is connected with the business.

Aluminum Advertising Novelties.

KELLY & McBEAN, Niagara Falls, N. Y., are manufacturing Aluminum Paper Cutters, especially adapted to advertising purposes. One side of the handle is embossed, while the other side is left plain, and upon which the manufacturers put any name or design desired. The firm are also making a new line of Aluminum or Metal Signs, useful for store purposes and made in different shades of coloring. A new building, three stories and a basement, is nearly completed, which will be utilized in November by the firm for the manufacture of patented specialties in their line.

Bicycle Repair Tools.

THE FRASSE COMPANY, 19 Warren street, New York, issue a catalogue of Tools specially adapted to Bicycle repairing. It illustrates and gives prices on the following: Anvils, Adjustable Arbor, Tire Heater Burner, Foot Bellows, Brazing Blow Pipes, Geared Scroll Chuck, Clamps, Spoke Cutter, Crank Jack, Spoke Grip, Spoke Header, Spoke Heading Jaws, Spokes, Lathe Dogs, Hand and Breast Drills, Broaches or Reamers, foot or steam power Drilling Machines, Drills, Portable Forges, Mounted Grindstones, Lathes, Automatic Sawing Machine, Slotting Saw Clamp, Screw Plates, Tap, Die and Drill Bracket, Vises, Slide Rest Tools, Pocket Wrenches, &c. The catalogue will doubtless be found very convenient by the increasing number of the trade who are interested in Bicycle repairs.

Cleveland Foundry Company.

THE CLEVELAND FOUNDRY COMPANY, Cleveland, Ohio, have met with a serious loss by fire, in which their four-story building was entirely lost. This part of their factory contained their machinery, mounting floors and stock rooms. They saved the greater part of their patterns and of their foundry, japanning rooms and tinning rooms. They expect to be in temporary quarters at once, and will be in shape to fill orders in from 20 to 30 days. Their loss is well covered with insurance. On behalf of their many customers they solicit all reasonable patience in the case of unfilled orders, and a continuance of their past patronage for the future.

The Stewart Wire Company.

THE STEWART WIRE COMPANY, Easton, Pa., have completed the repairs and improvements which they have been making in their works, and have resumed operations. They are prepared to receive orders and contracts for their well-known brands of Iron and Steel Wire, and are in position to make prompt shipment and to give careful attention to orders in every detail. They state that it is their purpose to maintain in every regard the excellent reputation their product has earned. The company have appointed E. T. Carswell as their sales agent, who is located at room 21, 239 Broadway, New York.

Trade Items.

MALLORY-WHEELER COMPANY, 64 Reade street, New York, are exhibiting some attractive examples of ornamental Door Sets, Push Buttons, Sash Lifts Key Plates, and everything necessary for inside trim. The goods are of Romanesque design, cast solid and finished in oxidized silver, old copper, statuary and gold bronze. This quality is intended for fine work, and much of it, we are told, has already been specified for by leading architects.

HARRIMAN HOE & TOOL COMPANY, Harriman, Tenn., have recently added a line of Eye Hoes to the goods manufactured by them. The line includes the Giant Eye Hoe, sometimes called Fisher or Bare Hoe, made in sizes from 6 to 8 inches, also in special sizes for sprouting; Cane and Hilling Hoes, all hammer forged, of crucible cast steel; Planters' Eye Hoes from 6 to 9 inches, forged from one piece of best cast steel, and Scovill Pattern Eye Hoes from 6 to 9 inches, also forged from one piece of best cast steel.

THE INDEPENDENT ELECTRIC COMPANY, Chicago, manufacturers of the Whitely Exerciser, illustrate this apparatus in their advertisement on another page. A description of the Exerciser was given in our columns a few weeks since. The company call attention to its simplicity, noiseless action and self adjustment for a large variety of muscular exercises. They also refer to the reasonable price at which it is offered. The company have issued a 64 page pamphlet entitled "Health and Strength," in which the subject of practical athletics is touched upon, illustrations and descriptions being also given of some of the princi-

pal exercises with their apparatus. This pamphlet will be mailed postpaid on receipt of 10 cents. A smaller pamphlet is also issued designed especially for agents.

THE WILKESBARRE GUN COMPANY, Wilkesbarre, Pa., have completed their new Ejector Gun and expect to have it on the market in a few months.

GERMANTOWN TOOL WORKS, Philadelphia, have just put on the market a Bell Face Adze Eye Nail Hammer, known as No. 48, size 1. This they state is a convenient Hammer made from material similar to their No. 47 Adze Eye Nail Hammer. They are also making a new size in their line of Solid Cast Steel Broad Hatchets, known as No. 361, size 1. The No. 48 they pack one-half dozen, and No. 361 one-third dozen in patent boxes.

IN THEIR ADVERTISEMENT in this issue Amidon Tool Corporation, Buffalo, N. Y., call attention to and illustrate their Hack Saw Frames and Braces, alluding to the special features of these goods. John H. Graham & Co., 113 Chambers street, New York, are their agents. The Amidon Tool Corporation are putting a large and varied line of Braces and related goods on the market, and are known as prominent and enterprising manufacturers.

THE MONARCH CYCLE COMPANY, 42 to 52 North Halsted street, Chicago, are now busily making preparations for the coming season. They will greatly enlarge their output of Bicycles and propose to introduce many special features for 1895. The growth of this company's business has been almost phenomenal. They have cultivated the Hardware trade with assiduity, and will this year make stronger efforts than ever to reach the great and increasing mass of Bicycle users through the medium of Hardware merchants. J. W. Kiser is president and general manager of the company, Chandler Robbins is vice-president and secretary and L. M. Richardson is assistant manager. The attention of the trade is directed to the company's advertisement, which will be found in this issue.

PUTNAM NAIL COMPANY tendered a complimentary banquet to the Master Horseshoers' National Protective Association, at the Quincy House, Boston, October 10. This was in connection with the third annual meeting of the association, which convened October 9. The banquet was in every way successful and a thoroughly enjoyable affair.

IN THEIR ANNOUNCEMENT occupying one of the advertising pages in this issue Dame, Stoddard & Kendall, Boston, Mass., call prominent attention to the line of Knives, Cork Screws and Fine Steel Implements manufactured by Robert Murphy, for which they are sole selling agents. Illustrations are given of different styles of Oyster Knives, Adjustable Knife Handle, Shirtmakers' Knife Blades and Banana Knives.

MATTHAI, INGRAM & Co., Baltimore, Md., are sending out a novel folder descriptive of their Maryland Improved Roaster and Baker. It is a pictorial representation of the article, the cover of which when raised discloses a turkey in process of roasting. On the inside of the cover is a list of the sizes manufactured and their prices.

THE KEYSTONE FARM MACHINE WORKS, York, Pa., are calling the attention of the Hardware trade to their Alligator Hay, Straw and Fodder Cutter and their Rapid Hay and Straw Cutter as being articles easily and profitably handled in every section of the country.

Request for Price Lists, Circulars, &c.

THE GOODMAN-RIGGS CUTLEKY COMPANY have been organized at Rockford, Ill., and they advise us that they will be pleased to receive catalogues and price-lists from manufacturers of Table and Pocket Cutlery, Razors, Razor Strops, Scissors, Shears, &c. They should be addressed at 105 West State street, Rockford, Ill.

Price-Lists, Circulars, &c.

THE HERBRAND COMPANY, Tremont, Ohio, and 64 Reade street, New York: A well arranged and finely printed catalogue of Razors and Strops. There are 24 pages, each $10\frac{1}{2} \times 7\frac{3}{4}$ inches, covering a line of 145 Razors and upward of 50 Strops, of the various kinds which constitute an assortment. In offering these goods they refer to the quality of Steel, prepared for them and the best obtainable; each blade is guaranteed hand forged, separately tempered and fully warranted. Any Razor not found perfectly satisfactory will be exchanged for a new one. In connection with the Razors they are furnishing gratis to dealers, when three dozen Razors are ordered, a handsome folding display case, with three trays, each of which holds firmly in place 12 Razors. This case, supplied in either black or blue leatherette, makes when closed a very compact article, $16 \times 10 \times 2\frac{1}{2}$ inches, with two silvered clasps on each side. The sections, connected with movable metal braces, are lined with peacock blue silk plush. This case is suitable for window or show-case display, and can be placed on the counter or carried by a salesman.

STEPHENS & Co., Riverton, Conn.: Boxwood and Ivory Rules. An 1894 price-list relates to Boxwood and Ivory Rules, Yard Sticks, Bench Rules, Stephens' Combination Rule, Maple and Boxwood Desk Rulers. The business was established in 1854, and now, being better prepared than ever before to turn out their product in large quantities, they assure their patrons that orders will receive prompt attention.

THE STUART & PETERSON COMPANY, Burlington, N. J.: Hollow Ware, &c. A special circular is devoted to illustrations and prices of Jacketed Kettles, Chemists' Extractors, Chemists' Kettles, Chemists' Mixing Bowls, Transportation and Storage Cans, Round and Oblong Kettles, Evaporating Dishes, Mortars and Pestles, Sugar Pans, Caldrons, Square Tanks, Porcelain Lined Corner Mangers and Porcelain Bathtubs.

CALDWELL MFG. COMPANY, Rochester, N. Y.: Hardware Specialties. An illustrated and descriptive catalogue shows the Caldwell Sash Balance, Side Balance, Top Balance, Showcase Balance, Acme Aluminum Bronze Sash Ribbon, Acme Fasteners, Empire Side Sash Lock, Empire Ventilating Sash Lock, Little Gem Exerciser, Ajax Broom Holder, Screen Door Check and the Ideal Door Spring.

THE J. D. SMITH FOUNDRY SUPPLY COMPANY, Cincinnati, Ohio: Foundry Facings and Backings, Supplies, Equipments, and Refiners of Plumbago. The company issue a supplementary catalogue, No. 22, devoted to Tumbling Barrels and Exhaust Fans. Illustrations are given of various styles of casting cleaning machinery, with descriptions of each.

THE SHELBY STEEL TUBE COMPANY, Shelby, Ohio: Cold Drawn Seamless

Steel Tubes. Tubes are made for locomotive, fire, marine and other boilers, hydraulic presses, hollow spindles, spinning caps, bosc and trolley poles, couplings, bushings, ferrules, pneumatic sulkies, bicycles, and for other purposes. The makers state that by their process of manufacture every Tube is thoroughly tested, thus insuring uniform strength and freedom from flaws, and that the Tubes are round, true to gauge, the variation in either not exceeding $\frac{1}{16}$ inch per foot, and smooth both inside and outside.

HOLMES, BOOTH & HAYDENS, 37 Park place, New York and Waterbury, Conn.: McGill's Improved Patent Fasteners. Two catalogues are issued—catalogue A, illustrating the old make of these goods, which are still manufactured, and catalogue No. 1, illustrating the new style goods. The Fasteners are designed for fastening or binding papers; sampling heavy cloths, carpetings, &c.; for binding corners of documents; for hanging curtains, portières and other drapery, &c., &c. The manufacturers refer to these goods as being of fine mechanical construction, artistic in design, strong, of fine quality and finish, and of universal adaptability and efficiency for the purpose intended.

E. M. RICHARDSON, Waltham, Mass.: Circular illustrating the Waltham Steel Spring Wire Blind Fastener, and the Waltham Blind Hinges, which he is manufacturing. It also calls attention to the Sash Weights of the Chelsea Foundry Company, Chelsea, Mass., for whom Mr. Richardson is agent. These Sash Weights are referred to as full weight and smooth with plain figures. They are made with a combination eye for cord, tape or chain.

AN ITEM is going the rounds of the press to the effect that the assassination of the French President Carnot is likely to make the fortune of Guillaume, the Hardware dealer in Cette, where the assassin Caserio bought the knife with which he committed his crime. Since the origin of the knife became known the dealer has been inundated with orders for weapons of similar pattern and size to that used on the fatal night at Lyons. Orders come from France and from abroad, one from Brussels being for 300 daggers. During the last month the Hardware merchant has sent out over 1000 of these articles to various places.

It Is Reported—

Arkansas.

That S. W. Simpson, Hardware, &c., CLINTON, has been succeeded by C. E. Simpson.

That J. G. Robb has removed his stock of Hardware from WISTER, INDIAN TERRITORY, to FORT SMITH.

That W. J. Hodges & Co. have succeeded J. W. Price as dealers in Stoves and Hardware at BRADFORD.

That Woodyard & Son have succeeded Lovell & Horn as dealers in Hardware, Stoves, &c., at CAVE CITY.

That Davis & Walker, BALD KNOB, have dissolved partnership. W. J. Walker will continue the business.

That Polk & Davis, dealers in Stoves and Hardware at SULPHUR ROCK, have dissolved partnership. J. L. Davis will continue.

That R. E. Dudley of FULTON and C. R. Dudley of HOPE have consolidated their Stove and Hardware business under the name of Dudley Bros.

That Fones Bros. Hardware Company's establishment, at LITTLE ROCK, was unroofed by a cyclone which visited that vicinity on the 3d inst. The stock was damaged by water to the extent of \$500. The new building

of the Dickinson Hardware Company was also unroofed, the stock sustaining damage estimated at \$2500.

Connecticut.

That the Meriden Hardware Company, MERIDEN, have been formed. They have purchased the business of the late George W. Sprague, on East Main street. The company are composed of Edward J. Higby, George J. King and John C. Caswell. Mr. Higby will manage the business.

District of Columbia.

That J. C. Campbell & Son, Hardware dealers, ANACOSTIA, recently suffered slight damage from fire.

Florida.

That R. S. Maley has purchased the interest of Mrs. Balcom in the firm of R. S. Maley & Co., Hardware dealers, DAYTONA, and is now the sole proprietor.

Georgia.

That Barnum & Murdock, Hardware merchants, KIRKWOOD, have dissolved partnership. Pope & Johnson, dealers in Agricultural Implements, &c., have also dissolved.

That the copartnership heretofore existing between L. C. Frazer and D. P. Dozier, under the firm name of Frazer & Dozier, COLUMBUS, was dissolved on the 9th inst. by mutual consent, D. P. Dozier retiring. L. C. Frazer will continue the business.

Illinois.

That Berliner & Goede is the style of a firm which will shortly engage in the Hardware business at HARLEM.

That Mr. Volberding of ELGIN will soon open a new Hardware store at BUCKLEY.

That Hall & Rogers have sold their Hardware store, at ALEDO, to J. A. and W. K. Wells of PIPER CITY, who will continue the business at the old stand under the style of Wells Bros. The Messrs. Wells were formerly engaged in the Hardware, lumber and grain business in PIPER CITY.

That R. B. Smiley's Hardware store, at DE KALB, was entered by thieves on the 2d inst., who carried off a quantity of Knives, Razors, &c.

That D. G. Boone's Hardware store, at SIDNEY, was burglarized on the morning of the 3d inst., and a large amount of Cutlery and other articles taken away.

Indiana.

That Woody, Marshall & Sims, Hardware and Implements, RUSSIAVILLE, have been succeeded by Marshall, Middleton & De Leon.

Iowa.

That W. A. Duckworth's Hardware store, at KEOSAUQUA, was robbed on the 6th inst. A large quantity of Cutlery, Revolvers, &c., was taken.

That E. E. Miller has bought out C. W. Chambers' interest in the Hardware firm of Lichty & Chambers, ELMA, and the style of the firm will hereafter be Lichty & Miller.

That a new Hardware store will soon be opened at NORTHWOOD, by Messrs. Brebner & Klove.

That Row & Book's Hardware store, at ADEL, was recently visited by fire. Loss estimated at \$3000; fully insured.

That F. J. Ingwerson, BELLE PLAINE, has been burned out.

That E. B. Booher, Hardwareman, ANTHON, was recently burned out.

Kansas.

That W. J. Thompson has gone into partnership with James Swift in the Hardware business at LEAVENWORTH. The style of the firm is Swift & Thompson.

That L. P. Birchfield, in the Hardware business at LEBANON, has sold out.

Kentucky.

That F. A. Kinsey, HODGENSVILLE, Stoves and Tinware, has been succeeded by Gilmore & Miller.

That Emerson & Harpole have succeeded Thos. Emerson, Hardware, &c., CLINTON.

Louisiana.

That J. Marchaud has succeeded A. Bronsard in the Hardware business at St. PHILLIPS.

Michigan.

That F. J. Cook & Co., Hardware merchants, FOWLERVILLE, have dissolved partnership. Mr. Cook will continue the business alone.

That O. J. Avery has sold out his Hardware business, at ADRIAN.

Minnesota.

That Smart & Butler's Hardware store, at AUSTIN, was recently burned out.

That John Touhey of CHATFIELD has sold his stock of Hardware to F. L. Tesca and H. H. Heydon. The stock will be divided between the two stores. Mr. Touhey will hereafter devote his attention to farming.

That H. J. Wortman of CHASKA is building a Hardware store at WATKINS.

That Overstad & Co. and John Erickson, Hardware dealers, at HANCOCK, have consolidated their business under the style of Erickson & Overstad.

That Carl Luhmann has bought out his partner in the Hardware and Lumber business, at HOWARD LAKE, and will for the present conduct it alone.

That H. J. NIEBUHR is selling out his Hardware stock, at GOOD THUNDER.

Mississippi.

That W. E. Bradshaw has purchased a half interest in the Hardware business of J. O. Broadwee, at BROOKHAVEN. The style of the new firm is W. E. Bradshaw & Co.

Missouri.

That Cullom & Wolfe, Hardware and Harness dealers, CLEARMONT, have sold out to Wolfe & Houston.

Nebraska.

That the establishment of the Morse Hardware Company, at ATKINSON, was damaged by fire on the 6th inst. The loss is estimated at \$1000, fully covered by insurance.

That John A. Wright of SCRIBNER has bought a Hardware store at ELMWOOD and taken possession of it.

New Mexico.

That Long & Craig, Hardware merchants, ROSWELL, have dissolved.

North Dakota.

That South & Kelley, Hardware merchants, at DEVIL'S LAKE, have dissolved partnership. Mr. Kelley will continue the business alone.

Ohio.

That on the 10th inst., burglars gained an entrance to the store of the Alcott Hardware Company, FOSTORIA, by cutting a pane of glass from a rear window, and carried off \$100 worth of Revolvers, Knives, Razors, &c.

Pennsylvania.

That six fine breech-loading Guns were stolen from the store of the Seneing Hardware Company, at GOODVILLE, on the night of the 10th inst.

That the Gun store of Thomas L. Briggs of CHESTER was burglarized on the 5th inst. Two hundred dollars' worth of Fishing Tackle and Revolvers were taken.

That the Stove and Tinware firm of Thomas & Taylor, KENNETH SQUARE, was dissolved on the 1st inst. Charles Thomas will continue the business at the old stand.

South Dakota.

That the W. J. Healey Hardware Company of MITCHELL have been incorporated. The capital is \$25,000. The incorporators are W. J. Healey, A. B. Healey and M. J. Healey.

That Clark G. Coats and J. M. Farrell of BROOKINGS COUNTY are nego-

tiating for the purchase of E. Larson's Hardware store, at SIOUX FALLS.

Tennessee.

That Pafford & Scott have succeeded D. D. Pafford in the Hardware business at LEXINGTON.

Texas.

That A. J. Baker, in the Hardware business at SAN ANTONIO, has been succeeded by George Hagelstein.

That W. H. Sedberry, formerly of MARSHALL, will engage in the Hardware business at GREENVILLE.

That E. Strauss of WACO is erecting a large brick building in which to carry on his wholesale Hardware business.

Virginia.

That S. Heptenstell & Co., Hardware dealers, GRAHAM, have been succeeded by J. G. Bailey.

Wisconsin.

That J. F. Bischoff, Hardware merchant, SUPERIOR, has removed from his old quarters on Second avenue, near Becker avenue, to a commodious building on West Fifth street, adjoining the Descent Block.

That Fredrickson & Reitzel of WHITEHALL have sold out their stock of Hardware to Blodgett & Overby.

The Hardware trade throughout the country are requested to report business changes, improvements and other matters of trade interest suitable for mention in this department.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

White Lead.—Some increase is noted in orders for Dry White Lead and the distribution of Lead in Oil has increased somewhat also. While thus showing improvement, the volume of business is not above the average for the season. If anything, it is somewhat short, and inquiries suggest that buyers are still very partial to conservative operation. Old process Dry Lead sells at $4\frac{1}{4}\phi$ @ $4\frac{1}{2}\phi$, where taken in round lots, and quick process at about $\frac{1}{4}\phi$ less. Best brands of domestic Lead in Oil go at $5\frac{1}{4}\phi$ @ $5\frac{1}{2}\phi$, in wholesale quantities, and off grades at from 5ϕ down to $4\frac{1}{4}\phi$, according to brand and quantity. English for future delivery may be secured at $5\frac{1}{2}\phi$, possibly at a shade less, but only moderate quantities are selling.

Red Lead.—Outside of routine business nothing has been done and the market for all grades, foreign and domestic, is momentarily rather dull. Sellers quote about the same prices that they have for some time past, but concessions are made on desirable orders and the market shows rather weak tone.

Litharge.—There is free offering of low grade foreign for future shipment, and in some instances $4\frac{1}{4}\phi$ is openly quoted, indicating that European manufacturers, or some of them, will sell as cheaply as home producers where round lots are involved. Despite the low prices, however, business is moderate. For the finer grades used in the Paint trade prices are steady, but the demand is only fair.

Orange Mineral.—Dealings in both foreign and domestic have been moderate, and the market remains in a spiritless condition, with hardly any movement in prices.

Zincs.—American Oxide has met with limited sale and buying interest at present is slow. Such as it is, however, the business suffices to keep prices quite steady. Foreign brands are taken sparingly and prices for all

varieties remain about the same they were a week ago.

Colors.—In the market for Dry Colors there is no new feature. Business is fair, yet chiefly of hand-to-mouth type, and prices vary in a slight degree only. Oil Colors, with the exception of some few specialties, are quiet. Ready mixed paints have been selling remarkably well.

Oils and Turpentine.

Linseed Oil.—Most crushers hold steadfastly to prices that have prevailed since the beginning of the month. Occasionally there are reports of sales at relatively lower rates by some out of town manufacturers, but such sales, if any are actually made, have no visible effect upon the general market. There is little doing outside of routine business, but the distribution would appear to be fully up to the autumn average.

Cotton Seed Oils.—The market still has a rather weak appearance. Exporters are placing few orders and large home consumers move very cautiously. This is attributed to the fact that prospects are for a large supply of Seed and consequently a liberal out-turn of Oil. Sales have been made at prices on the basis of 26ϕ @ 27ϕ for prime Crude, and 32ϕ @ 33ϕ for prime Summer Yellow, early delivery. Rumor has it that an order was taken for the better quality at 30ϕ for November-December delivery.

Lard Oil.—Prices are still more or less variable, and influenced by the fluctuations in the market for raw material. As usual when matters are unsettled, buyers move cautiously and the market has a dull as well as a weak appearance. Sales have been made of Prime City at 62ϕ @ 63ϕ , which prices are quoted at the present time.

Fish Oils.—A large transaction in Crude Menhaden Oil has been effected, partly for home and partly for export account. The quantity is understood to be between 7,500 and 10,000 bbls. The price not far from 20ϕ . Particulars are, however, withheld. Fair sales of Crude Sperm Oil have recently been made at about 56ϕ in New Bedford and a round lot of Crude Whale Oil went at 32ϕ there. These low rates tend to cause some modification of quotations for the pressed and bleached products, but thus far little change has been made by manufacturers.

Spirits Turpentine.—The speculative fever has subsided and business is now proceeding in the usual way. Supplies are liberal, and, with only fair demand, prices show some weakness. Sales have been made at 28ϕ @ $28\frac{1}{2}\phi$, as to style of package.

The Electric Searcher Bicycle Lamp.

The Tilman Magneto Dynamo Company, for whom R. E. Rodriguez, 97 Chambers street, New York, is agent, have made an improvement in the manner of attaching the disk to the frame by which the dynamo is operated. An illustrated description of the bicycle lamp and attachments was given in *The Iron Age*, August 2, 1894. The improvement consists of a bushing connected with the shaft of the disk, by which the disk can be placed at any angle on the frame and held in place by a set screw. This allows a greater or less pressure of the disk against the tire, resulting in a greater or less speed being given the dynamo. The attachment is fitted with either of two sizes of bushing; one suitable to frames from $\frac{1}{4}$ to $\frac{1}{2}$ inch and the other for frames from $\frac{1}{2}$ to $\frac{3}{4}$ inch.

McGill's Adjustable Hanger.

Holmes, Booth & Haydens, 37 Park place, New York, are offering the adjustable hanger here shown. The hanger, Fig. 1, is adapted to receive, bind and hang calendars, show cards,

not only suitable for odd jobs by amateurs, but much better than those improvised by the professional mechanic. It is made of beech wood $\frac{3}{4}$ inch stuff, planed smooth, with bevels and right angles accurately sawed. One side projects $\frac{1}{8}$ inch below the bottom, so it can be held firmly with one hand against

than its full length is used, is removed just above the holding barb and the washer closed over it, producing a permanent binder, presenting a corresponding cap or head on each side of the articles bound. The fasteners are designed for sampling heavy cloths, carpetings, binding leather, &c.

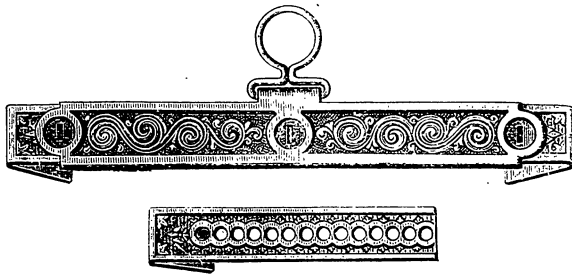


Fig. 1.—Adjustable Hangers.

papers, &c., varying from 6 to 20 inches in width, and of any bulk or thickness. The lower cut in Fig. 1 represents the adjustable arm, one of which is used in each end of the hanger. The hanger is secured to the article suspended by a round headed



Fig. 2.—Round Headed Fastener.

fastener, Fig. 2, these being made with heads in a large variety of designs. The hangers are made in three sizes, No. 1, adjustable from 6 to 10 inches; No. 2, from 10 to 15 inches, and No. 3, from 15 to 20 inches. The prod compass, Fig. 3, is adapted to punch holes in the papers bound, to receive the fasteners. The manufacturers refer to these goods

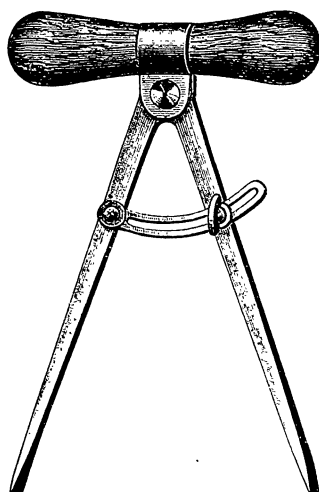


Fig. 3.—Prod Compass.

as being of great strength, artistic design, elegant finish, and as being perfect for the purposes intended.

Beech Miter Box.

Marten Doscher, 88 Chambers street, is offering a handy and convenient article in the form of a wood miter box,

bench, box or table without slipping. The sides are held by screws countersunk and so placed that it is impossible in cutting for the saw to touch them. The boxes are made in two sizes, 12 and 18 inches long, and sold to the trade at \$2 and \$3.50 per dozen respectively.

Christensen's Line Fastener.

The line fastener shown herewith is offered by Herman C. Larsen, 23 East Fourteenth street, New York. The fastener is cast in one piece and galvanized. In use the clothes line is passed through the fastener as shown in the cut and the end drawn through the open slot. This binds on the rope above, preventing slipping. It is explained that the fastener insures a tight line, which may be instantly loosened when desired; that as the line becomes slack from usage it may be tightened

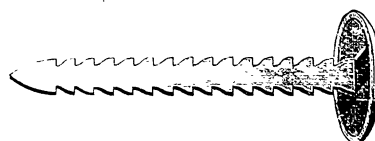
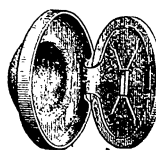


Christensen's Line Fastener.

in a moment, and that it obviates the necessity of tying the line, the knot of which pulls tight and is difficult to untie.

Sampling Barbed Fastener.

The accompanying cut represents McGill's sampling fastener, put on the market by Holmes, Booth & Haydens, 37 Park place, New York. The sampl-



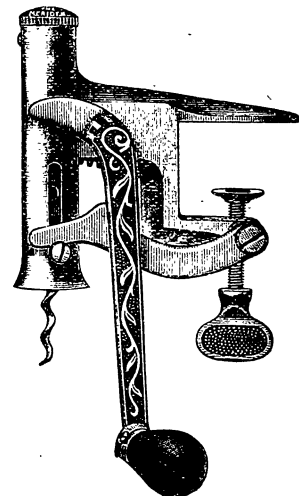
Sampling Barbed Fastener.

ing barbed fastener consists of a closing spring washer and a barbed fastener. The shank of the fastener is a single blade having barbed edges. The closing washer has an inner locking plate, which locks the washer on the barbed shank at the point desired. The projecting end of the shank, when less

than its full length is used, is removed just above the holding barb and the washer closed over it, producing a permanent binder, presenting a corresponding cap or head on each side of the articles bound. The fasteners are designed for sampling heavy cloths, carpetings, binding leather, &c.

The Meriden Cork Puller.

Manning, Bowman & Co., Meriden, Conn., and 57 Beekman street, New



The Meriden Cork Puller.

York, are introducing the cork puller shown in the accompanying cut. In operation the handle of the puller is raised so that it will rest back over the counter; the cork of the bottle is then held firmly up under the barrel of the puller, while the handle is brought forward and down to the position shown

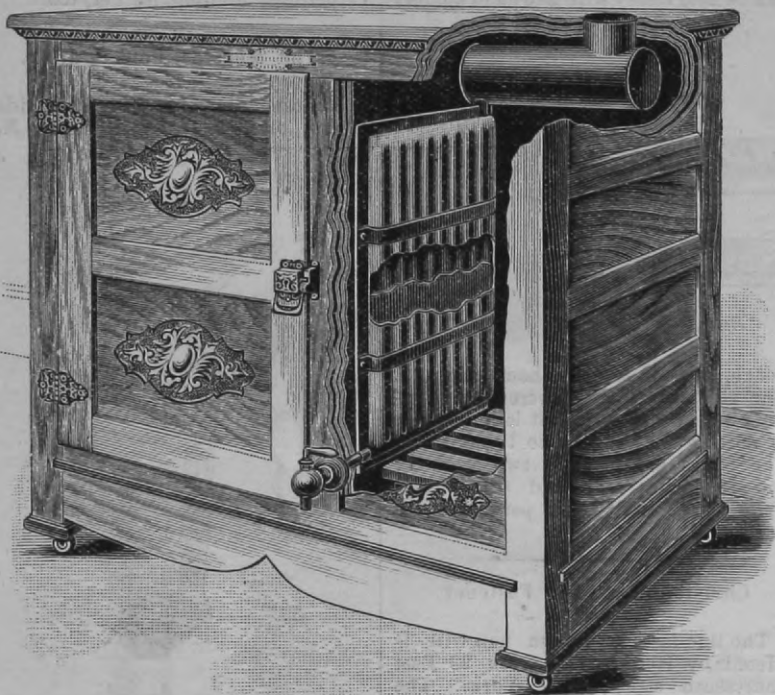
in the cut. This operation, it is explained, passes the worm through the cork, while the reverse motion of turning the handle back until the cam on the crank rests on the lever draws the cork. After the bottle is removed the handle is turned still further back, which, it is stated, presses the lever down and throws off the cork, leaving the machine in position for the next bottle. A hole in the rack or plunger is provided for oiling the parts, and the

top of the barrel is covered with a removable cap, so that the puller may be taken apart for replacing parts that may become broken. The manufacturers state that they have avoided defective construction and that the puller shows great strength, easy power and lasting qualities.

Automatic Water Cooler Attachment.

The Columbia Refrigerator Company, Northville, Mich., are offering an improved water cooler attachment in connection with their refrigerators, of

water is drawn from the faucet it is immediately replaced in the cooler from the storage tank above. The point is made that the device is especially valuable where the water is so impure as to make boiling it before using a wise precaution. It also obviates the neces-



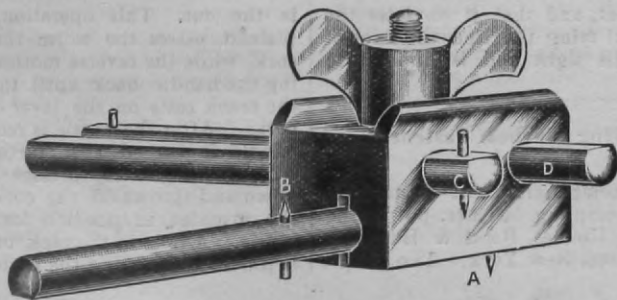
Automatic Water Cooler Attachment.

which a cut is shown herewith. The cooler is described as having its sides made of corrugated copper sheets with both surfaces tinned, and a flat sheet riveted between them, dividing the cooler into two compartments. The cooler forms the division between the ice chamber proper and the storage chamber of the refrigerator. From the upper rear corner of the cooler a pipe extends upward to the storage tank, which is placed in the upper back corner of the ice chamber. It is explained that when the apparatus is filled the cooler operates automatically, and that the water is kept in constant circulation from the fact that the water in the side of the cooler next to the ice

sity of putting ice, with all the impurities which may be concealed in it, into the water itself.

Reeves Butt, Mortise and Marking Gauge.

C. E. Jennings & Co., 97 Chambers street, New York, are offering the improved butt gauge here shown. It is made of steel, highly polished and nickel plated. The gauge is primarily designed for hinging doors, and can be set at one time for marking the jambs and the back and side of a door, the different markings being made by reversing



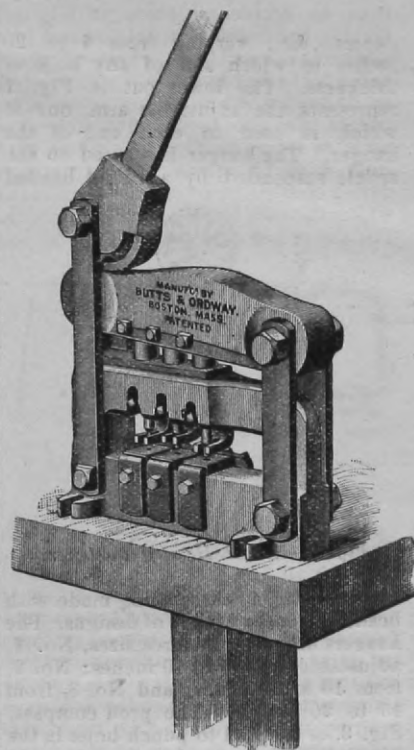
Reeves Butt, Mortise and Marking Gauge.

will be colder than that on the side next to the storage chamber. This will cause the water, it is further explained, to fall on the cold side and to rise on the warmer side, the openings at the top and bottom allowing the water to pass freely from one compartment of the cooler to the other. The cooler, it is pointed out, it only $1\frac{1}{2}$ inches in thickness, leaving a thin but large body exposed to the ice, cooling it quickly and causing a rapid circulation. When

the gauge. The point A projecting through the slot in the bottom, gives the cut in the rabbet of the door. The point B is to give the cut on the door, setting the door the required distance from the stop when hinged. Points C and D in the top slides are to mark the depth of the hinge in the door and jamb. The gauge gives three independent gauges for general work, and may also be used as a mortise gauge by reversing either of the points C or D.

B. & O. Triple Punch.

Butts & Ordway, 502 Atlantic avenue, Boston, Mass., are putting on the market a triple punch, as shown in the accompanying cut. The tool consists of a solid frame of iron forming the base and guide frame through which the plungers pass; also of a heavy head piece, to which, on the under side, the plungers are attached. This is fastened to the base frame on one end by two parallel strips of steel secured above and below by heavy bolts, while on the other end it is permitted to move freely between them, as the strips on this end extend above the plunger frame and are there bolted to the base of the lever. Hand power applied to the handle of the lever is transmitted, it is remarked, in greatly increased force by means of a



B. & O. Triple Punch.

simple cam movement. It is stated that the machine is capable of punching up to $\frac{1}{4}$ inch in $\frac{5}{8}$ -inch iron, and is equipped with three dies—one each $\frac{1}{4}$, $\frac{5}{8}$ and $\frac{3}{4}$ inch, either of which, it is explained, may be used without loss of time in changing dies. The punch is designed for use wherever small holes are to be punched in metal. The machine weighs 150 pounds, and is recommended to be used, set up and bolted to a bench.

Sliding Door Latch.

In our advertising columns W. H. Thomas, Jenkintown, Pa., illustrates a new sliding door latch, to which he is drawing the attention of the hardware trade. On reference to the illustration it will be seen that the latch is designed principally for sliding doors, but may be used as a straight gate latch, or a thumb latch, by simply turning the latch the other way up, which brings the slot to the top. The latch may be used on either side of a single or double door, and is said to prevent sliding doors from rattling.

Frasse's Electric Folding Hack Saw Frame.

The Frasse Company, 19 Warren street, New York, are introducing folding hack saw frames, as shown in the accompanying cuts. When not in use the handle may be folded under the back of the frame, Fig. 2, instantly releasing all strain and tension from the blade, to obviate all risks of breakage



Fig. 1.—Frasse's Electric Folding Saw Frame.

from an accidental blow or fall and making the frame compact to place in a mechanic's small tool chest or short valise, or to be carried in the hip pocket by linemen when ascending poles. The frames are also made with extension back, as shown in Fig. 2, to take blades from 8 to 12 inches. The extension device consists of a cylinder sleeve into which the two pieces of the back slide. The sleeve has a series of holes at the

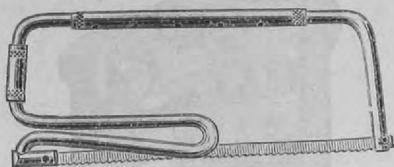


Fig. 2.—Showing the Handle Folded.

top into which a pin in one of the back pieces actuated by a spring engages, thus giving the desired length to the frame when extended. The point is made that this is a radical departure from screw adjusting frames, as there are no screws used in its construction, and that the tension being obtained by a simple turn of the handle is always positive and uniform. The manufacturers claim that the parts of the frame are durable and that they cannot get

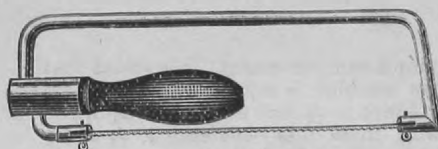


Fig. 3.—Electric Folding Saw Frame, Wood Handle.

out of order. The frames are made in four styles: No. 1 with wire handle, taking 8 inch blades; No. 2 with wire handle and extension, taking blades from 8 to 12 inches; No. 3 wood handle for 8-inch blades and No. 4 wood handle with 8 to 12 inch extension. It is remarked that the cheaper form is especially adapted to household use for sawing bones; on a farm for cutting off bolts, screws and wire and for repairing mowing machines and other uses. The frame is named Electric because of its especially convenient form for use on electric work.

Baker Chain & Wagon Iron Mfg. Company, Allegheny, Pa., call attention to the fact that they are furnishing a line of ironed single and double trees, made of first-class material and

well finished, that will have longer life than it is possible for the wagon maker to furnish, when made in the old fashioned way. The company state that they use the best selected hickory entirely in their goods, also full gauge iron in making their clips and of stock equal to the best Swedish iron, thus insuring the longest possible life at the lowest minimum cost.

The Imperial Hot Blast Blow Pipe.

The White Mfg. Company, 40 and 42 State street, Chicago, Ill., have just put on the market a gasoline blow pipe,



The Imperial Hot Blast Blow Pipe.

which is herewith illustrated. The manufacturers offer it as a complete tool for soldering, brazing, burning paint, melting metals, heating soldering coppers, thawing frozen pipes, making heavy soldered joints, &c. It will run for four hours. The burner has a generator of double the usual strength, which can be regulated to furnish a flame of any size by a turn of the knob. The needle valve has a patent renew-

every drop of gasoline. The reservoir is tested to 30 pounds pressure and warranted.

Pasteboard Wads.

The Union Metallic Cartridge Company, Bridgeport, Conn., Hartlev & Graham, 315 Broadway, New York agents, are bringing out a series of top shot wads of pasteboard for general sale, as here illustrated. The object of this arrangement is to provide a wad for each kind of powder, whether smokeless, nitro or black, subdivided so that there is a wad for each size of shot

for every powder. There is a distinctive color for each powder, while the name of it and the size of shot is plainly printed on both sides. This enables dealer or sportsman to tell at a glance what any loaded shell contains. For instance, a white wad indicates black powder, red for E. C., yellow for American Wood, salmon for Schultze, and so on through the list of powders. The wads are conveniently put up in heavy



White.



Yellow.



Salmon.

Pasteboard Top Shot Wads.

able seat which can be replaced when worn out at a cost of only 10 cents, making the torch equal to new. The reservoir is made of one piece of specially rolled brass of heavy gauge, rendering it leak proof, and yet the construction is such that the entire apparatus is light. The air valve is at the bottom of the pump, conveniently placed, dispensing with outside tubes and fixtures. The pump is very simple, supplying a strong blast and draining

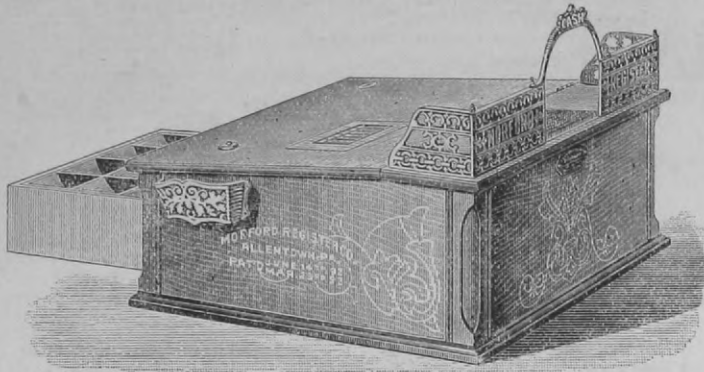
paper boxes of 250 each, in packages of four boxes or 1000 wads.

An exchange states that the depredations of cycle thieves who, with steel nippers, cut the linked chain of many locked wheels has led to the invention in England of a contrivance for locking the steering gear of a bicycle. By a turn of a key the front wheel of a machine can be locked in any position, and if the thief jumps on it in hope of

riding off with it he is likely to find himself unable to do so. The locking apparatus adds but a trifle to the weight of the machine, and is so small that it would quite escape notice unless one's attention was specially directed to it.

The Morford Automatic Cash Register.

The accompanying cut represents an automatic cash register put on the market by the Morford Register Company,



The Morford Automatic Cash Register.

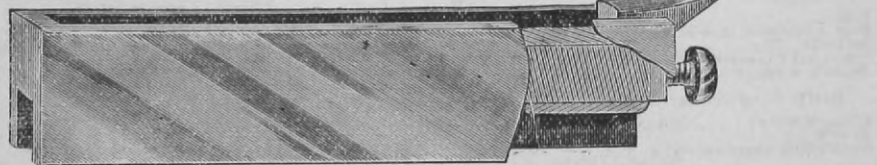
Allentown, Pa. The register is in the form of a desk made of quartered oak and furnished with nickel trimmings. It is 21 x 23 inches in size, and has a five key combination lock and registering attachment, also a sliding seven-pocket cash tray inside the larger cash drawer, which itself has seven compartments for bills. The top of the desk is provided with an opening partially covered with glass, under which is a continuous strip of specially ruled register paper. The various columns are headed as follows: Clerks, Sales, Paid Out on Account, Credit and Change. Each salesman is known by a letter which he writes in the column headed Clerks when entering a transaction on the register paper, thus showing which salesman is responsible for any transaction. The lid of the desk is provided with a special lock and key, so that a record once made cannot be touched by any one except the proprietor or some duly authorized person who has the key. In operation the money received from a sale would naturally be held in the left hand, while with the right the salesman first enters the amount with pencil in the opening in the cover, placing the whole amount, dollars and cents, in the same column. Then with the fingers of the right hand the proper keys of the combination, at the right hand side of the desk, are pressed, after which the button on the top of the lid is pushed with the thumb. This rings the bell, changes the register, sends the entry under the glass beyond reach of alteration in full view of the customer, unlocks and projects the cash drawer. The point is made that the cash drawer cannot be opened without ringing the alarm bell and moving the register sheet along. If no entry is made the omission is instantly detected, as the register sheet will show a blank space. The fact is emphasized by the manufacturers that it is utterly impossible to open the cash drawer without moving the register sheet. It is further explained that all sales, money paid in on account and disbursements are unerringly indicated; that the register itemizes each salesman's work and tells how many sales

are made daily, by whom, to whom, and what amounts are paid, or charged to account; that caution and accuracy are impressed upon the cashier or salesman, and that errors may be instantly settled to the perfect satisfaction of any claimant by producing the register record. The manufacturers remark that the register always points out errors on the part of salespeople, as the record of any transaction being in the handwriting of the clerk prevents any possibility of dispute. The makers claim that the mechanical ideas embodied in the production of the register are such

as will insure uninterrupted service, preventing any possibility of the register working imperfectly.

Skate Plane.

The accompanying illustration shows a plane for sharpening and concaving skate runners, introduced by Wm. B. Lynch, Tacony, Philadelphia. The tool consists of a hollow frame of iron of a shape to easily fit over the runner of a skate. There is a ledge or shoulder at each inside upper end of the frame against which rests a small four sided file, held in position by a set screw. The file has three flat surfaces and one convex surface. In use the plane is placed on the runner of a skate, held runner uppermost on a board or on the edge of a table, and the full length of the runner from heel to toe is planed in the ordinary way. It is claimed that the tool will concave a runner as well as impart a square surface, and will



Skate Plane.

obviate the necessity for the use of a grindstone or emery wheel, and that it gives a better surface. The tool is neatly nickel plated and is put on the market to retail for 25 cents.

The Tiger Padlock.

The Miller Lock Company, Philadelphia, Pa., are introducing an automatic locking padlock, known as the Tiger, made of wrought steel or brass. The lock is referred to as being handsome in finish, thoroughly well made and of desirable and reliable construction. Each

lock has two brass tumblers and two plated steel keys. The locks are put up in packages, each containing six locks, with six changes, a figure on each lock showing its changes. The lock is being introduced to meet the demand for efficient padlocks of low cost.

Western Autograph Register.

The illustration herewith shown is of an Autograph register, put on the market by the Western Autograph Co., St. Louis, Mo. The register consists of a neat iron case, nickel plated, in which are independently mounted on spindles three rolls of paper, two of which are blank while the other is appropriately printed and numbered for the class of transactions for which the register is to be used. The strips of paper from these rolls are brought forward together over the writing table in the top of the register, being passed between transfer ink papers in such a manner that whatever is written on the top strip is reproduced in *fac simile* on each of the two strips underneath. After the check is written a turn of the crank at the side



Western Autographic Register.

draws the three strips forward simultaneously, two passing out of the register to be used in completing the transaction, while the third is retained in the register, being rewound on the record core, making an inaccessible continuous record of all transactions. The two checks which have passed out of the register are torn off against a



knife edge provided for the purpose, the original going to the purchaser while the duplicate is sent to the cashier. The register is referred to as being simple in construction, impossible to get out of order, and as being particularly adapted to the retail trade, doing away with the check book system which has been in use so long. It is also convenient, being attached to the counter, thus preventing the search for pencils, books, &c., to enter sales, &c. The manufacturers advise us that the register is giving the best of satisfaction to those using them.

Current Hardware Prices.

OCTOBER 17, 1894.

NOTE.—The quotations given below represent Current Hardware Prices, whether made by manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail Hardware merchants. Very small orders and broken packages often command higher prices.

The character @ is used to indicate a range of price: thus discount 50 & 10% @ 50 & 10 & 5%, signifies that the goods in question are sold at prices ranging from 50 & 10% to 50 & 10 & 5%.

Adjusters, Blind—

Domestic..... * doz \$3.00, 85% @ 33% & 10%
 Excelsior..... * doz \$10.00..... 50 & 10 & 2%
 Worth's..... List net @ 10%
 Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

American—

Agile Anvil, * 2 1/2..... 15 & 15 & 5%
 Horse shoe brand, Wrought..... 9% @ 10%
 Barnes Mfg. Co..... 50%

Imported—

Armitage Mouse Hole..... 8% @ 10%
 F. & H., machine finished..... 9% @ 10%
 Trenton..... 9% @ 10%
 Peter Wright's..... 9% @ 10%
 Peter Wright's..... 9% @ 10%

Anvil Vise and Drill—

Allen Anvil and Vise \$3.00..... 40 & 10%
 Cheney Anvil and Vise..... 25%
 Millers Falls Co., \$18.00..... 20%
 Holt's..... 40 & 10 & 10%

Apple Parers—See Parers Apple, &c.

Augers and Bits—

Boring Machine Augers..... 70 & 70 & 10%
 Car Bits, 12-in. twist..... 50%
 Common Augers and Bits..... 70 & 70 & 10%
 Cincinnati Belt-Hangers' Bits..... 40%
 Worthington Pat. Auger Bits..... 25%
 Jennings' Pattern Car Bits..... 40%
 Jennings' Pattern Auger Bits..... 40%
 A. R. Jennings & Co., No. 10, extension lip..... 40%
 C. E. Jennings & Co., No. 30..... 60%
 C. E. Jennings & Co., Auger Bits, * set 32% quaters, No. 5, 8; No. 80, \$3.50, 25%
 Russell Jennings' Augers and Bits..... 25 & 10%
 Lewis' Patent Auger Bits..... 15 & 10%
 L'Hommedieu Car Bits..... 15 & 10%
 Pugh's Black..... 20%
 Pugh's Jennings Pattern..... 30%
 Snell's Bits..... 60 & 5 & 60 & 10%

Bit Stock Drills—

Cleveland..... 50 & 10 & 5%
 Cincinnati, for wood..... 40 & 10 & 10%
 Cincinnati, for metal..... 50 & 10 & 10%
 Morse Twist Drills..... 50 & 10 & 5%
 New Process Twist Drill Co..... 50 & 10 & 5%
 Standard..... 50 & 10 & 5%
 Syracuse, for metal..... 50 & 10 & 5%
 Syracuse, for wood (wood list) 80 & 10 & 40%

Expansive Bits—

Clark's small, \$18; large, \$26..... 40 & 10 & 5%
 Ives' No. 4, * doz \$60..... 40 & 10 & 10%
 Stearns' No. 1, \$28; No. 2, \$18..... 40 & 10 & 5%
 Stearns' No. 2, \$48..... 20%
 Swan's..... 40 & 10 & 10%

Gimlet Bits—

See..... 25 & 25 & 10%
 Common..... * gross \$2.50 @ \$3.00
 Diamond..... * doz \$1.25..... 40 & 10%
 Double Cut..... 40 & 10%
 Hartwell's..... * gross \$1.00..... 40 & 10%
 Douglas's..... 40 & 10 & 50%
 Ives..... 60 & 10 & 60 & 10 & 5%
 Shepardson's..... 45 & 10 & 45 & 10 & 5%

Hollow Augers—

Bonney's Adjustable, * doz..... \$21.00
 Cincinnati Adjustable..... 25 & 10%
 Cincinnati Standard..... 25 & 10%
 Douglas's..... 35% @ 33% & 10%
 French, Swift & Co. (Beecher)..... 35% @ 33% & 10%
 Ives..... 35% @ 33% & 10%
 Ives' Expansive, each \$4.50..... 50 & 5%
 Stearns..... 20 & 10%
 Universal Expansive, each \$4.50..... 20%
 Wood's, * doz., \$48..... 25 & 10%

Ship Augers and Bits—

L'Hommedieu's..... 15 & 10 & 15 & 10 & 5%
 Snell's..... 25 & 25 & 10%
 Snell's Ship Auger Pat'n Car Bits..... 15 & 10 & 15 & 10 & 5%
 Watrous..... 25 & 25 & 10%

Awl Hafts—See Hafts, Awl.

Awls—

Brad, Handled..... * gr. \$2.50 @ \$3.00
 Brad, Shoulders..... * gr. \$1.30 @ \$1.40
 Peg, Pat..... * gr. 35% @ 38%
 Peg, Should..... * gr. \$1.50 @ \$1.55
 Scratch, Handled..... * gr. \$4.00 @ \$4.50
 Scratch, Socket..... * doz. \$1.10 @ \$1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands..... \$6.00 @ \$6.50
 First quality, other brands..... 5.50 @ 6.00
 Beveled add 60% * doz.

Axle Grease—See Greases, Axle.

Axles—

No. 1 Common..... 34 @ 34%
 No. 2 Common..... 44 @ 44%
 Nos. 7 to 18..... 70%
 Nos. 15 to 18..... 47% & 5%
 Nos. 19 to 22..... 70%
 Concord, loose collar..... 44 @ 44%
 Concord, solid collar..... 66 @ 64%

Bag Holders—See Holders, Bag.

Balances—

Sash—
 Caldwell, low list..... 90%
 Pullman..... 60%
 Sensible..... 60%

Spring—

Spring Balances..... 40 & 10 & 50%
 Chatillon, No. 200..... 80
 Chatillon, No. 80..... 0.05 1.75 net
 Chatillon Straight Balances..... 40 & 10 & 10%
 Chatillon Circular Balances..... 50 & 10%

Barb Wire—See Wire, Barb.

Bars—

Crow—
 Cast Steel..... * 2 3/4 @ 3 1/2
 Iron, Steel Points..... * 2 3/4 @ 2 3/4

Basins, Wash—

Standard Fiberglass, No. 1, 10 1/2 in., \$1.80;
 12-in., \$2.00; 18 1/2 in., \$2.50.

Beams Scale—

Scale Beams, List Jan. 12, '82..... 50 & 10 & 50 & 10 & 5%
 Chatillon's No. 1..... 40%
 Chatillon's No. 2..... 50 & 10 & 50 & 10 & 5%
 Custers'..... 35%

Seaters—

Egg—
 Bryant's..... * gross \$14.00
 Double (H. & R. Mfg. Co.), * gross, No. 0 \$12.00; No. 1, \$15.00; No. 2, \$36.00
 Dover..... * doz \$1.00; * doz, \$10.50
 Dover, Ex. Family Size..... * doz., \$3.50
 Dover (Standard Co.)..... * doz \$1.00
 Duplex (Standard Co.)..... * doz \$1.00
 Duplex Extra Heavy (Standard Co.)..... * doz. \$3.50
 Easy (H. & R. Mfg. Co.)..... * gross \$12.00
 Improved Acme (H. & R. Mfg. Co.)..... * gross \$9.00
 Silver & Co..... * doz \$4.50
 Spiral..... * gross \$4.25 @ \$4.50
 Triple (H. & R. Mfg. Co.)..... * gross \$16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;
 No. 2, \$2..... 20%

Bells—

Cow—
 Common Wrought..... 60 & 10%
 Kentucky Durham..... 70 & 10%
 Kentucky, Sargent's list..... 70 & 10%
 Kentucky, "Star"..... 20 & 10%
 Texas Star..... 50 & 10 & 6%
 Western, Sargent's list..... 70 & 10%

Door—

Crank, Brooks'..... 50 & 10 & 2%
 Crank, Cone's..... 10%
 Crank, Connel's..... 20 & 10%
 Gong, Abbe's..... 35% @ 10%
 Gong, Barton's..... 40 & 10%
 Gong, Yankee..... 45 & 10%
 Lever, R. & E. Mfg. Co.'s..... 50 & 10 & 2%
 Lever, Sargent's..... 60 & 10%
 Lever, Taylor's Bronzed or Plated..... net
 Lever, Taylor's Japanned..... 25 & 10%
 Pull, Brooks'..... 50 & 10 & 2%

Electric—

Bigelow & Dowse..... 20 & 20 & 10%
 Wollensak's..... 20 & 20 & 10%

Hand—

Extra Heavy Brass..... 70%
 Light Brass..... 70 & 10 & 70 & 10 & 5%
 Silver Chime..... 35% @ 10%
 White..... 50 & 10%
 Globe Cone's Patent..... 25 & 10 & 5%

Miscellaneous—

Call..... 45 & 50%
 Farm Bells..... 50 & 20%
 Steel Alloy Church and School Bells..... 50%

Bellows—

Blacksmiths'..... 60 & 10 & 70%
 Hand Bellows..... 50 & 10 & 10%
 Molders'..... 50 & 10 & 10%

Belt, Rubber—

Common Standard..... 75 & 10 & 75 & 10 & 5%
 Extra..... 60 & 10 & 50 & 70%
 Standard..... 70 & 10 & 75%
 N.Y.B. & P. Co., Carbon..... 60 & 10 & 8%
 N.Y.B. & P. Co., Double Diamond..... 60%
 N.Y.B. & P. Co., 1846 Para..... 40 & 10%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender 15 & 15 & 10%
 Green River Tire Benders and Upsetters..... 50%
 Stoddard's Lightning Tire Upsetters..... 15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron..... 50 & 10 & 60 & 10%
 Moore's Novelty, Mal. Iron..... 60%
 Sarge Grip Steel Tackle Blocks..... 25 & 25 & 10%
 See also Machines Hoisting.

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84..... 80 & 20 @ 80 & 25%
 Genuine Eagle, Norway, list Oct. '84..... 80 & 5 @ 80 & 10%
 Eagle, Norway, list Oct. '84..... 80 & 10 @ 80 & 10%
 Phila. pattern, list Oct. 7, '84..... 80%
 R. B. & W., old list..... 70%
 Bolt Ends, list Jan. 1, 1890..... 80 & 20 @ 80 & 25%
 Machine, list Jan. 1, 1890..... 80 & 25%

Door and Shutter—

Cast Iron Barrel Square, &c..... 75 & 10 @ 75 & 10 & 5%
 Cast Iron Chain (Sargent's list)..... 65 & 10 @ 65 & 10 & 5%
 Cast Iron Shutter Bolts..... 75 & 10 @ 65 & 10 & 5%
 Ives' Patent Door Bolts..... 60 & 10 @ 60 & 10 & 10%
 Wrought Barrel..... 75 & 10 @ 80%
 Wrt B. K. Flush Common..... 60 & 10 @ 60 & 10 & 10%
 Wrt Shutter, Brass Knob..... 60 & 10 @ 60%
 Wrt Shutter, Sargent's list..... 60% @ 70%
 Wrt Shutter, all Iron, Stanley's..... 75 & 10 @ 80%
 Wrought Square..... 75 & 10 @ 80%
 Wrt Sunk Flush, Sargent's list..... 60 & 10%
 Wrt Sunk Flush, Stanley's list..... 60 & 10%

Stove and Plow—

Plow..... 60 & 10 @ 60 & 10 & 10%
 Stove..... 65 @ 70 & 5%
 R. B. & W., Plow..... 60%

Tire—

Common, list Feb. 28, '83..... 70 & 10%
 American Screw Company..... 70 & 10%
 Norway, Phila., list Oct. 16, '84..... 75 & 10%
 Eagle, Phila., list Oct. 16, '84..... 80 & 10%
 Ray State, list Feb. 28, '83..... 70 & 10%
 Franklin Moore Co..... 70 & 10%
 Norway, Phila., list Oct. 16, '84..... 75 & 10%
 Eagle, Phila., list Oct. 16, '84..... 80 & 10%
 Eclipse, list Feb. 28, '83..... 70 & 10%
 Port Chester Bolt and Nut Company..... 70 & 10%
 Empire list Feb. 28, '83..... 70 & 10%
 Keystone, Philadel., list Oct. '84..... 80 & 10%
 Norway, Phila., list Oct. '84..... 70 & 10%
 R. B. & W., Philadel., list Oct. 16, '84..... 85%

Borers, Tap—

Common and Ring..... 20 & 10%
 Clark's..... 35% @ 35%
 Enterprise Mfg. Co..... 25%
 Ives' Tap Borers..... 35% @ 35%

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Letter—

Tatum's..... 40

Boxes, Wagon—

Per doz..... 24%

Boxes, Miter.

Spilker's Excelsior, 3 in. \$7.50, 4 in. \$8.50, 5 in. \$13.00, 6 in. \$15.00..... 20%

Braces—

NOTE.—Most Braces are sold at net prices.

Barber's..... 50 & 10%
 Armstrong's..... 50 & 5%
 Common Ball, American..... \$1.00 @ \$1.10
 Davis' Patent..... 50 & 10%
 Fray's Genuine Spindorf's..... 50 & 10 & 5%
 Fray's Nos. 70 to 120, 81 to 123, 207 to 414..... 50 & 10 & 5%
 Ives' New Haven Novelty..... 70 & 70 & 5%
 New Haven Ratchet..... 60 & 5 @ 60 & 10%
 Barber Ratchet..... 60 & 5 @ 60 & 10%
 Barber's..... 60 & 5%
 Spindorf's..... 60 & 5 @ 60 & 10%
 P. S. & W. Co., Peck's Patent..... 60%
 Rose & Johnson..... 50%

Brackets—

Shelf, fancy..... 70 & 70 & 10%
 Sargent's list..... 70 & 70 & 10%
 Other makes at a wide range of prices.
 Shelf, plain..... 65 @ 70%
 Regular, list..... 60 & 10 @ 60 & 10%
 Sargent's list..... 60 & 10 @ 60 & 10%
 Bradley Shelf Brackets..... 75%

Bright Wire Goods—See Wire.

Brollers—

Hens' Self-Inch..... 9 10 9x11
 Basting, 1 per doz..... \$4.50 5.50 6.50
 Morgan Odorless..... * doz. \$12.50
 New Haven..... 50%
 Wire Goods Co..... 65 & 10%

Buckets, Well and Fire—See Pails.

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butchers.

Butts—

Brass—

Cast Brass, Fast..... 35% @ 10%
 Cast Brass, Loose Joint..... 35% @ 10%
 Cast Brass, Tiebout's..... 60%
 Wrought Brass..... 80 & 10 @ 80 & 20%

Cast Iron—

Fast joint, Broad..... 60 & 10 @ 60 & 10 & 10%
 Fast Joint Narrow..... 60 & 10 @ 60 & 10%

Loose Joint, Japanned..... 75 & 10 @ 80%

Loose Joint, Jap. with Acorns..... 40%
 Loose Pin, Acorns..... 40%
 Loose Pin, Acorns, Japanned..... 40%
 Mayer's Hinges..... 70%
 Parliament Butts..... 70%

Wrought Steel—

Fast Joint, Broad..... 70%
 Fast Joint, Narrow..... 70%
 Fast Joint, Lt. Narrow..... 70%
 Inside Blind, Light..... 70%
 Inside Blind, Regular..... 70%
 Loose Joint, Broad..... 70%
 Loose Pin..... 70%
 Table Butts, Back Flaps, &c..... 70%
 Bronzed Wrought Butts..... 50 & 10 @ 50 & 10 & 5%

Cages, Bird—

Hendryx Brass..... 10%
 3000, 5000, 1100 series..... 10%
 1200 series..... 40%
 200, 300, 600 and 900 series..... 40 & 10 & 50%
 Hendryx Bronze..... 40 & 10 @ 50%
 700, 800 series..... 40 & 10 @ 50%
 Hendryx Enamelled..... 40 & 10 @ 50%

Callipers—See Compasses.

Calks Too—

Burke's, One Prong, Blunt..... 45 @ 55
 Burke's, One Prong, Sharp..... 55 @ 65
 Burke's, Two Prong, Blunt..... 55 @ 65
 Burke's, Two Prong, Sharp..... 55 @ 65
 Gaudier, One Prong, Blunt..... 55 @ 65

CanOpeners—See Openers, Can.

Cans Milk—

S. B. & Co., 5-gal., \$3.00; 5-gal., \$2.40;
 10-gal., \$4.75 each..... 40 & 10

Cans Oil—

Galvanized Blue Band, 1 gal., * doz. \$2.25
 Galvanized Blue Band, 5 gal., Tip-Top..... * doz. \$12.00
 Galvanized Blue Band, 5 gal. Facets..... * doz. \$3.75

Glass Oil, Friend..... * doz. \$3.75

Caps—Percussion—

Eley's E. B..... 50 @ 55
 Eley's D Waterproof, Central Fire..... \$1.00
 Hicks & Goldmark's and Union Metallic Cartridge Co..... 50 @ 55
 B. Grand Edge, Cent. Fire, 1-10's..... 47 @ 50
 E. B. Trimmed Edge, 1-10's..... 47 @ 50
 F. L. Waterproof, 1-10's..... 35 @ 37
 G. D..... 27 @ 30
 Musket, Waterproof, 1-10's..... 50 @ 53
 S. B. Genuine Imported..... 45%

Primers—

Berdan Primers..... 25%
 B. L. Caps (Sturtevant Shells) \$1.00..... 25%
 All other Primers, \$1.20..... 25%

Cards—

Watson's Cotton, Wool, Horse and File, list January 23, 1891.....

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

B. B. Caps, Coll. Ball, Swd., \$1.85 @ \$1.90
 B. B. Caps, Round Ball..... \$1.60 @ \$1.65
 Blank Cartridges, except 22 and 28 cal., additional 10% above discount.
 Blank Cartridges,

Chalk Lines —See <i>Lines</i> .	
Checks, Door —	
Barclay's.....	20%
Unity.....	50%
Chisels —	
Socket Framing and Firmer	
Ohio Tool Co.....	75¢10¢30%
P. S. & W.....	
Widderby.....	30%
Buck Bros.....	30%
Charles Buck.....	30%
Douglas.....	75¢75¢10%
Merrill.....	60¢10¢60¢10¢25%
L. & J. J. White.....	30¢90¢25%
Tanged and Miscellaneous	
Buck Bros.....	30%
Charles Buck.....	30%
Butcher's.....	\$4.75¢45.00 to 2
Bear & Jackson's.....	\$5 to 2
Tanged Firmer.....	50¢50¢10%
L. & J. J. White, Tanged.....	25¢25%
Cold Chisels, fair quality, # 1.....	15¢10¢15%
Chucks —	
Beach Pat.....	each \$8.00.....20%
Danbury.....	each \$8.00, 80¢20¢25%
Graham Patent.....	35%
Morse's Adjustable, each.....	\$7.00, 20¢20¢25%
Syracuse, Bait Pat.....	25%
McKinner Patent Chucks.....	40%
Combination Lathe Chucks.....	25%
Drill Chucks.....	25%
Independent Lathe Chucks.....	25%
Planer Chucks.....	20%
Universal Lathe Chucks.....	40%
Union Mfg. Co.....	40%
Combination.....	40%
Independent.....	40%
Universal.....	40%
Victor.....	\$3.50, 25%
Churns —	
McDermid Star Barrel Churn, each	6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.
Tiffin Union, each, 5 gal. \$3.25; 7 gal., \$3.75; 10 gal., \$4.25.	
Clamps —	
Adjustable, Cincinnati.....	25¢10%
Adjustable, Hammers.....	15¢15¢25%
Adjustable, Stearns.....	80¢80¢10%
Barnes' Malleable Screw and Cabinet.....	50%
Barnes' Machinists' Clamps.....	70¢10%
Cabinet, Sargent's.....	25¢10%
Carpenter's, Cincinnati.....	25¢10%
Carriage Makers', P. S. & W. Co.....	40¢10%
Carriage Makers', Sargent's.....	75¢75¢25%
Eberhard Mfg. Co.....	40¢25¢40¢10%
Joiners' Clamps, Tatum's.....	25¢10%
R. L. Tool Co's Wrought Iron.....	25%
Saw Clamps, see <i>Vices, Saw Piles</i>	
Stearns' Malleable, with Wrought Iron	Screw.....75¢75¢25%
Stearns' Steel.....	25%
Warner's.....	40¢10¢40¢10¢25%
Cleavers, Butchers' —	
Beatty's.....	40¢25¢40¢10%
Bradley's.....	25¢30%
Poster Bros.....	25¢30%
New Haven Edge Tool Co.'s.....	40%
Nichols Bros.....	30%
P. S. & W.....	30%¢40¢30%¢10%
Schulte, Lohoff & Co.....	40¢40¢25%
L. & J. J. White.....	25%
Clips —	
Baker Spring Clips.....	25¢10%
Norway Axle.....	70¢70¢25%
Norway Spring Bar Clips.....	60¢10¢10¢70%
2d grade Norway Axle.....	70¢70¢10%
Steel Felloe Clips.....	# 1.....40¢10%
Superior Axle Clips.....	70¢70¢25%
Wrought Iron Felloe Clips.....	# 1.....40¢10%
Cloth and Netting, Wire —	See <i>Wire, etc.</i>
Cockeyes —	50%
Cocks, Brass —	
Hardware List, Globe, Kerosene, Lever	Bibbs, Racking, etc.....60¢2¢60¢10
Coffee Mills —See <i>Mills, Coffee</i> .	
Collars, Dog —	
Brass, Pope & Stevens' list.....	40%
Chapman Mfg. Company, new list.....	40%
Embossed, Gilt, Pope & Stevens' list.....	80¢10%
Leather, Pope & Stevens' list.....	40¢10%
Medford Fancy Goods Co.'s.....	40¢10%
Combs, Cur —	
American Curry Comb Co.....	33¢40%
Fitch.....	50¢10¢60¢10¢10%
Gibb's Magnetic.....	¢ doz., \$2.00
Kohler's Humane.....	¢ doz., \$1.75
Kohler's Magic Oscillating.....	¢ doz., \$2.00
Rubber, per doz., \$10.00.....	25%
Compasses, Dividers &c. —	
Compasses, Callipers, Dividers.....	70¢10%
Bemis & Call Co.'s.....	65%
Dividers.....	65%
Callipers, Call's Patent Inside.....	65%
Callipers, Double.....	65%
Callipers, Inside or Outside.....	65%
Callipers, Wing.....	60%
Compasses.....	60¢25%
Excelsior.....	50%
Starrett's.....	25%
Combination Dividers.....	25%
Lock Callipers and Dividers.....	25%
Spring Callipers and Dividers.....	25¢10%
Stevens & Co.'s.....	25¢10%
Coolers, Water —	
S. S. & Co.: 2-gal., \$3.40; 3-gal., \$4.00;	4-gal., \$4.50; 5-gal., \$5.00 each.....60%
Coopers' Tools —	See <i>Tools, Coopers</i> .
Cord —	
Braded, Crown —	
Braded, Crown Drab and Fancy, #	1.....30%
Braded, Crown White, # 1.....	50%
Cable Laid Italian Sash.....	# 1.....20%
Common.....	# 1.....20%
Common Russia Sash.....	# 1.....20%
Common India Hemp, Braded.....	# 1.....20%
India Cable Laid Sash.....	# 1.....20%
Massachusetts, White.....	21¢22%
Ossawa Mills —	
Crown, Solid Braded White.....	# 1.....22%
Crown, Drab and Fancy.....	# 1.....22%
Braded Giant, Drab and Fancy.....	# 1.....22%
Braded, Giant White.....	# 1.....22%
Patent, good quality.....	# 1.....10¢11%
Patent, Russia Sash.....	# 1.....13¢14%
Barren —	
Braded, Drab Cotton.....	# 1.....42%
Braded, Italian Hemp.....	# 1.....40%
Braded, Lumen.....	# 1.....40%
Braded, White Cotton.....	# 1.....37%
Temper Idem, Braded, White.....	30%
Silver Lake —	
A quality, Drab, 55¢.....	25%
A quality, White, 50¢.....	25%
B quality, Drab, 35¢.....	10%
B quality, White, 30¢.....	10%
Sylvan Spring, Extra Braded, Drab.....	35%
Sylvan Spring, Extra Braded, White.....	35%

Tate's Solid Braded —	
Economy Drab.....	# 1.....27%
Economy, White.....	# 1.....32%
Hercules, Drab.....	# 1.....30%
Hercules, White.....	# 1.....32%
White Cotton Braded, fair.....	# 1.....35¢24%
Wire Picture —	
Braded or Twisted.....	80¢10¢80¢20%
Corkscrews —See <i>Screws, Corks</i> .	
Corn Knives and Cutters —	See <i>Knives, Corn</i> .
Crackers, Nut —	
Acme.....	
Japaned, # gro., \$30.....	50%
Nickel Plated, # gro., \$30.....	37%
Fancy Nickel Plated, # gro., \$30.....	40%
Table (H. & B. Mfg. Co.).....	50%
Turner & Seymour Mfg. Co.....	50%
Cradles —	
Grain.....	50¢20¢50¢25¢2%
Crays —	
White Crays, # gross.....	60¢6%
Cases, 100 gr., \$3.75¢4.25, at factory.	
M. H. Steward Mfg. Co.....	
Mail Workers' Mfg. Co., gross, \$2.50, 20¢25%	
Railroad, # gross, 2.00, 20¢25%	
Rolling Mill, # gross, 2.50, 20¢25%	
Soapstone Pencils, # gross, 1.50, 20¢25%	
See also <i>Chalk</i> .	
Creamery Pails —See <i>Pails, Creamery</i> .	
Crow Bars —See <i>Bars, Crow</i> .	
Curry Combs —	
See <i>Combs, Curry</i> .	
Cutters—Meat —	
American.....	50%
Each.....	\$5 \$7 \$10 \$25 \$50 \$80
Enterprise.....	25%
Nos.....	10 12 22 32 42
Each.....	\$3 \$2.50 \$4 \$6 \$15
Dixon's, # doz.....	40¢40¢25%
Nos.....	\$14.00 \$17.00 \$19.00 \$30.00
Draw Cut, each:	
Nos. 5 2 6 8	
\$50 \$75 \$80 \$225.....	20¢25%
Hale's, # doz.....	70¢70¢25%
Nos.....	11 12 15
Home No. 1, # doz.....	\$26.00 \$35.00 \$45.00
Little Giant, # doz.....	40¢10¢50%
Nos. 305 310 312 320 322	
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00	
Miles' Challenge, # doz.....	45¢45¢10%
Nos.....	\$22.00 \$30.00 \$40.00
Triumph No. 505, # doz.....	\$21.00 \$25.00 \$30.00
Woodruff's, # doz.....	40¢40¢25%
Nos.....	100 150
Chadborn's Smoked Beef Cutter, # doz.....	\$15.00 \$18.00
Enterprise Beef Shavers.....	20%
Slaw and Kraut —	
Tucker & Dorsey Mfg. Co.:.....	40%
Kraut Cutters, # doz.....	\$21.00
Slaw Cutters, 1 Knife, # gross.....	\$21.00
Slaw Cutters, 2 Knife, # gross.....	\$30.00
Tobacco —	
Acme.....	# doz., \$20.00, 40%
All Iron.....	# doz., \$20.00, 40%
Campton.....	# doz., \$20.00, 40%
Nashua Lock Co.'s.....	# doz., \$18.00, 60¢55%
National.....	# doz., \$21.00, 30%
Sargent's.....	# doz., \$22.00, 80¢10%
Washer —	
Appleton's.....	# doz., \$18.00, 60¢10%
Bonney's, # doz.....	\$8.50, 50¢50%
Campton.....	# doz., \$12.00, 25¢10%
Johnson's.....	# doz., \$11.00, 33¢4%
Penny's, # doz., Pol. \$14; Jap'd, \$16, 55%	
Smith's Pat.....	# doz., \$12.00, 20¢10%
Tatum's.....	25¢10%
Diggers, Post Hole, &c. —	
Cronk's Post Bars, # doz.....	\$80.00, 50¢25%
Eureka Diggers.....	# doz., \$10.50, \$12.00
Fletcher Post Hole Augers, # doz.....	\$36.00, 20¢20%
Gem, Improved.....	# doz., \$8.50, \$10.00
Gibbs' Columbia.....	# doz., \$10.00, \$11.00
Gibbs' Columbia.....	# doz., \$10.00, \$11.00
Gibbs' Imperial.....	# doz., \$7.50, \$8.50
Gibbs' National.....	# doz., \$12.00, \$13.00
Gibbs' Post Hole Digger.....	# doz., \$12.75, \$13.75
Kohler's Hercules.....	# doz., \$12.00, \$13.00
Kohler's Invincible.....	# doz., \$10.00, \$11.00
Kohler's Little Giant.....	# doz., \$10.00, \$11.00
Kohler's Champion.....	# doz., \$7.50, \$8.50
Kohler's Pioneer.....	# doz., \$9.00, \$10.00
Ryan's.....	# doz., \$18.00, \$20.00
Samson, # doz.....	\$34.00, 25¢25%
Universal.....	# doz., \$15.00, \$16.00
Shimer's Hollow Handle.....	# doz., \$24.00, \$25.00
Vaughan's Post Hole Auger, # doz.....	\$8.50, \$9.50
Dividers —See <i>Compasses</i> .	
Dog Collars —See <i>Collars, Dog</i> .	
Door Checks —	See <i>Checks, Door</i> .
Door Springs —	See <i>Spring, Door</i> .
Drawers, Money —	
Money Drawers, # doz.....	\$18.00, \$20.00
Waddell's Improved, No. 1, # doz.....	\$15.00, \$16.00
Waddell's Improved No. 2, # doz.....	\$18.00, \$19.00
Waddell's Comb, Cutlery Case and	Alarm Tilt.....\$12.50
Drawing Knives —	See <i>Knives, Drawing</i> .
Drills and Drill Stocks —	
Automatic Boring Tool.....	\$1.75¢1.85
Blacksmiths' Drills, Stearns.....	each \$1.75
Blacksmiths' Self-Feeding, each.....	\$7.50, 20%
Breast, Bartholomew's, No. 14, # doz.....	\$3.00, 25%
Breast, Millers Falls.....	each \$3.00, 25%
Breast, P. S. & W.....	40¢10%
Chicopee Automatic Drill.....	20¢10%
Goodell Automatic Drills.....	40¢25¢40%
Ratchet, Curtis & Curtis.....	35%
Ratchet, Ingersoll's.....	25%
Ratchet, Merrill's.....	20¢20¢25%
Ratchet, Moore's Triple Action.....	20¢20¢25%
Ratchet, Parker's.....	20¢20¢25%
Ratchet, Weston's.....	20¢25%
Ratchet, Whitney's.....	20¢10%
Whitneys Hand Drill, Plain.....	\$11.00, 20%
Adjustable.....	\$12.00, 20%
Twist Drills —	
Cleveland.....	50¢10¢10%
Diamond, # 1.....	50¢10¢10%
Graham's Pat. Groove Shank.....	50¢10¢10%
Morse.....	50¢10¢10%

New Process	50¢10¢5%
Standard.....	60¢5%
Syracuse (Metal list).....	50¢10¢10%
Drill Bits or Bit Stock —	
Drills —See <i>Augers and Bits</i> .	
Drill Chucks —See <i>Chucks</i> .	
Dripping Pans —	
See <i>Pans, Dripping</i> .	
Drivers, Screw —	
Allard's Spiral.....	50%
Brace Screw Drivers.....	25¢10%
Buck Bros.....	30%
Buck Bros' Screw Driver Bits.....	27¢25%
Clark's Pat.....	35¢40%
Cincinnati.....	25¢10%
Disston.....	25¢10%
Douglas Mfg. Co.....	20¢20¢10%
Electric Spiral.....	50%
Ellrich's Socket and Ratchet.....	40¢10%
Fray's Hol. H. die Sets, No. 8, \$12.00, 45%	
Fray & Parsons.....	50¢50¢5%
Howard-Allard.....	50%
Jones Reversible.....	40%
Knapp & Cowles.....	70¢10%
No. 1.....	70¢10%
No. 2.....	70¢10%
No. 3.....	60¢10%
No. 4 and 60, 60¢10%	
Kolb's Common Sense, # doz.....	\$8.00, 25¢10%
Mayhew's Black Handle.....	45¢10%
Mayhew's Monarch.....	70%
P. S. & W.....	70%
Sargent & Co.'s.....	60¢10¢10%
No. 20, 40 and 60.....	65¢10¢10%
Screw Driver Bits, Farr's.....	# gross, \$6.25
Screw Driver Bits.....	# doz., 50¢75¢
Stanley R. & L. Co.'s.....	65¢10%
No. 64, Varinshed Handles.....	65¢10%
No. 70.....	70¢10%
Stearns.....	25¢10%
Syracuse Screw Driver Bits.....	30¢30¢25%
C. T. Williamson Wire Novelty Co.....	50%
Egg Beaters —See <i>Beaters, Egg</i> .	
Egg Poachers —	
See <i>Poachers, Egg</i> .	
Electric Bell Sets —	
See <i>Bells, Electric</i> .	
Emery —	
No. 4 to No. 54 to Flour, CF	48 gr. 150 gr. F.F.F.
Kegs, # doz.....	4¢ 5¢ 3¢
1/2 kegs, # doz.....	4¢ 5¢ 3¢
1/4 kegs, # doz.....	5¢ 5¢ 3¢
10-# cans, 10.....	6¢ 6¢ 5¢
In case.....	6¢ 6¢ 5¢
10-# cans, less	than 10.....10¢ 10¢ 8¢
Enameled and Tinned Ware —See <i>Ware, Hollow</i> .	
Escutcheon Pins —	See <i>Pins, Escutcheon</i> .
Escutcheons —	
Brass Thread.....	60¢60¢10%
Door Lock.....	Same dis. as Door Lock
Wood.....	25%
Expanded Metal —	
List No. 5.....	
Door Mats, Galvanized.....	25%
Fencing, Painted Sheets.....	20%
Lathing.....	10%
Netting, Painted Sheets.....	20%
Tree Guards, Paneled.....	15%
Window Guards, Paneled.....	15%
Extractors, Lemon Juice —	See <i>Squeezers, Lemon</i> .
Fasteners, Blind —	
Austin & Eddy, # gr. sets.....	\$5.50
Mackrell's, # doz.....	\$1.00, 20¢20¢10%
Security Gravity.....	# gr., \$7.50
Van Sand's Old Pat., \$15 # gr.....	55¢10%
Van Sand's Screw Pat., \$15 # gr.....	60¢10%
Zimmerman's.....	50%
Faucets —	
B. & L. B. Co.....	
Turns Lock, Open and Shut Key.....	50%
Burnside's Red Cedar.....	50%
Burnside's Red Cedar, bbl. lot.....	50¢10%
Cork Lined.....	70¢25¢70¢10%
Fenn's.....	40%
Fenn's Cork Stools.....	33¢4%
Fray's Pat. Petroleum.....	60%
Metallic Key, Leather Lined.....	60¢10¢10%
National Measuring, # doz.....	\$36.00, 25¢10%
John Sommers'.....	
Peerless Best Block Tin Key.....	40%
IXL, 1st quality, Cork Lined.....	50%
Diamond Lock.....	40%
Perfect Lock, Red Cedar (in boxes).....	40%
Reliable Cork Lined.....	50%
O. K. Western Pattern Cork Lined.....	50%
No Brand, Red Cedar (in bbls.).....	50¢10%
Western Pattern Metal Key.....	40%
No Brand Metal Key.....	60%
Self Measuring.....	
Enterprise, # doz.....	\$36.00, 33¢4%
Lane's # doz.....	\$36.00, 25¢10%
Star.....	60%
Star, Metal Plug, new list.....	40%
Lockport, Metal Plug, reduced list.....	60%
Felice Plates —	See <i>Plates, Felice</i> .
Fibre Ware —See <i>Ware, Fibre</i> .	
Fifth Wheels —	
Brewster.....	50¢25%
Derby and Cincinnati.....	45¢25%
Files —	
Domestic —	
American.....	70¢70¢10%
Grade.....	60¢10¢10%
G. & H. Barnett (Black Diamond)	60¢10¢10%
Eagle.....	60¢10¢10%
Nicholson Files, Rasps, &c.....	60¢10¢10%
Nicholson (X.F.) Files.....	25%
Nicholson's Royal Files (Second)	75%
Other makers, best brands.....	70¢25¢70¢10%
Fair brands.....	75¢75¢25%
Second quality.....	80¢80¢10%
Arcade Horse Rasps.....	50¢10¢25%
Chelsea Horse Rasps, Hand Cut.....	60¢10%
Keller's Horse Rasps.....	60¢10%
McCarter's Horse Rasps.....	50¢10%
Trojan Horse Rasps.....	60¢10%
Imported —	
Butcher.....	Butcher's list, 80%
Strubbe.....	Strubbe's list, 75¢80%

Fixtures Grindstone —	
Moore's.....	65¢10%
P. S. & W. Co.....	50¢10¢10%
Reading Hardware Co.....	80¢10¢10%
Sargent's Patent.....	70¢10¢70¢10%
Fluting Machines —	
See <i>Machines, Fluting</i> .	
Fodder Squeezers —	
See <i>Squeezers, Fodder</i> .	
Forks —	
Hay, Manure, &c. Asso. List, 70¢70¢10%	
Hay, Manure, &c. Phila. List, 60¢80¢10%	
Plated, see <i>Spoons</i> .	
Frames —	
Saw —	
Red, Polished and Varnished.....	# doz., \$1.50, 25%
White Vermont.....	# gro., \$9.00, \$9.50
Screen, Window and Door —	
Bonzanz Window Screens.....	50¢10

Malters—

Cover's Adj. Rope Halters.....	40&25
Cover's Adj. Web Halters.....	35&25
Cover's Hemp Horse and Cattle Tie.....	50&10&25
Cover's Jute Cattle Ties.....	70&10&25
Cover's Jute Horse Ties.....	70&25
Cover's Rope, 7-16 in. Jute.....	70&25
Cover's Rope, 1/2 in. Hemp.....	35&25
Cover's Rope, Jute.....	60&10&10&25
Cover's Saddlery Works Halters.....	38&45
Cover's Saddlery Works Handy Web Halters.....	38&45
Cover's Saddlery Works Horse and Cattle Ties.....	38&45

Hammers—**Handled Hammers—**

Atha Tool Co.....	
Buffalo Hammer Co.....	50&10&60
Humason & Beckley.....	
Verree.....	
Cheney's Claw.....	40&10
Cheney's Machinist's & Riveting.....	60&25
C. Hammond & Son.....	40&10&50
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	30&10
Maydole's, list Dec. 1, '88.....	25&10&40
Peck, Stow & Wilcox.....	40&40&55
Fayette R. Plumb.....	
Artisans' Choice, A. E. Nail.....	40&12
Engineers' and B. S. Hand.....	80&15
Machinist's Hammer.....	80&15
Regular Y. & P. A. E. Nail.....	40&12
Other Hammers.....	60&5
Sargent's.....	40&10&50
Warner & Nobles, new list.....	25&10

Heavy Hammers and Sledges—

3 lb and under.....	40&40
5 to 10 lb.....	80&80&10
Over 10 lb.....	80
Wilkinson's Smiths.....	10&10&10

Handcuffs and Leg Irons—

See Police Goods.

Handles—**Cross-Cut Saw Handles—**

Atkins.....	40
Champion.....	15
W. J. Perfection.....	40
Sensible per doz.....	50.00, 50&50&10

Iron, Wrought or Cast—

Barn Door, per doz.....	20&5
Bronze Iron Drop Latches.....	40&60
Chest, Sargent's list.....	50&10&50&10&10
Door or Thumb.....	
Nos.....	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
Per doz.....	80.00 1.00 1.08 1.35 1.50
Jap'd Store Door Handles—Nuts, 1 lb.....	1.00
Plate, 1 lb; no plate, 80¢.....	1.00
Boggin's Latches.....	40&28&30

Wood—

Anger, assorted.....	gr 5.00
Anger, large.....	gr 7.00
File, assorted.....	gr 2.75
Brad Axl.....	gr 2.00
Apple Firmer Chisel, ass'd.....	gr 5.00
Apple Firmer Chisel, large.....	gr 6.00
Hickory Firmer Chisel, ass'd.....	gr 4.50
Hickory Firmer Chisel, large.....	gr 5.00
Socket Firmer Chisel, ass'd.....	gr 3.00
Socket Framing Chisel, ass'd.....	gr 5.00
Chisel, Fibre Head.....	39
Hammer, Hatchet, Axe, &c.....	40&40&25
Hoe, Rake, Shovel, &c.....	40
Pat. Auger, Douglass.....	set 1.25
Pat. Auger, Ives.....	30&10
Pat. Auger, Swan's.....	set 1.00
Saw and Plane.....	40&10&50

Hangers—

Barn Door, New England.....	70&70&5
Barn Door, old patterns.....	70&70&5
Barry.....	50
Best Anti-Friction.....	60&10&60&10&5
Boss.....	60&10&60&5
Carrier Steel Anti-Friction.....	60&10
Champion.....	60&10
Chicago Anti-Friction.....	60&10
Climax Anti-Friction.....	55&55&5
Crescent.....	60&60&10
Cronk's Patent, Steel Covered.....	60&10&5
Duplex (Wood Track).....	60&10&5
Economy.....	60&10
Hamilton Wrought Steel Track.....	65
Interstate.....	60&60&10
Kiddler.....	60&60&10
Lane's New Standard.....	60&60&5
Lane's Parlor.....	40&40&5
Lane's Standard.....	50&50&10
Lundy Steel Pad.....	60&10
Maglo.....	50&50&5
Matchless.....	60&60&5
Moody.....	40
Moore's Baggage Car Door.....	39
Moore's Elevator.....	39
Moore's Railroad.....	55
Nickel, Steel, Nos. 0, 25; 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	40&10&60
Orleans Steel.....	55
Paragon Nos. 5, 6, 7 and 8.....	20&10
Pendulum, Payson's.....	40&40&10
Perfection.....	50&10&60&10&5
Richards.....	80&80&10
Samson Steel Anti-Friction.....	55
Star.....	40&10&60&10&5
Stearns' Anti-Friction.....	20&10&10
Stearns' Challenge.....	25&10&10
Sterling.....	50&10&60
Terry's Ideal.....	50&10&60&10&5
Terry's Modern.....	50&10&60&10&5
Terry's Solid.....	50&10&60
Terry's Wrought Single Strap.....	50&10
Victor, No. 1, 15.00; No. 2, 16.50; No. 3, 18.00.....	50&22
Warner's Pat.....	20&10&10
Wild West.....	50&60&25
Zenith for Wood Track.....	55

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	
Blood's.....	
Bunt's.....	40 & 10
Eur's.....	50
Mann's.....	
Underhill's.....	
C. Hammond & Son.....	
Fayette R. Plumb.....	10
Collins.....	
Buffalo Hammer Co.....	
Kelly's.....	50 & 50
P. S. & W. Co.....	50 & 50
Sargent's & Co.....	50 & 50
Shulte, Lohoff & Co.....	
Ten York Edge Tool Co.....	

Hay and Straw Knives**See Knives.****Hinges—****Blind Hinges—**

Clark's Nos. 1, 3, 5, 1888, Old Pattern.....	75&10&5
Nos. 1 and 3, Tip Pattern.....	75&10&5
No. 50 Buffalo Noiseless, 40, 60 and 85.....	75
Buffalo Reversible, Nos. 3, 2, 1, 4 and 5.....	75&5
No. 1 Cottage for wood only.....	80&10
No. 1, Diamond, for wood only.....	80&5
Dixie L. & P., Nos. 3, 2, 1, 4, 1, 0, 0, 4 and 5.....	75&5
No. 25, Empire Reversible.....	75&10
Lull & Porter, Nos. 3, 2, 1, 4, 1, 0, 0, 4 and 5.....	75&10
Mortise Gravity, Nos. 2, 4, 4, 4, 6, 8, 9 and 10.....	50
Buffer.....	50&60&10
Parker.....	75&10
North's Automatic Blind Fixtures, No. 2, for Wood, 9.00; No. 3, for Brick.....	10
Reading's Gravity.....	75&10
Sargent's, Nos. 1, 3, 5, 11, 12, 13.....	75&10&75&10&5
Shepard's.....	
Acme, Lull & Porter, Nos. 3, 2, 1, 4, 1, 0, 0, 4 and 5.....	75&5
Buffalo Gravity Locking, Nos. 1, 3 and 5.....	80&5
Champion Gravity Locking, No. 75.....	80&10
Clark's or Shepard's 1888, Old Pattern, Nos. 1, 3 and 5.....	75&10&5
Clark's or Shepard's Tip Pattern, Nos. 1, 3 and 5.....	75&10&5
Double Locking, Nos. 20 and 25.....	70&5
Empire, Nos. 101 and 103.....	75&5
Niagara Gravity Locking, Nos. 1, 3 and 5.....	80&5
No. 50, 60, 65 and 55.....	80&5
O. S. Lull & Porter, Nos. 3, 2, 1, 4, 1, 0, 0, 4 and 5.....	75&10&25
Pioneer, Nos. 80, 45 and 55.....	75
Steamboat Gravity Locking No. 10.....	80&10

Gate Hinges—

Automatic.....	gr 12.50, 50
Clark's, Nos. 1, 2, 3.....	60&10&60&10&5
N. E. Reversible.....	gr 7.80, 60&60&10
N. E. Reversible.....	gr 5.80, 60&60&10
N. Y. State.....	gr 4.90, 60&60&10
Shepard's, Nos. 1, 2, 3.....	60&10&60&10&5
Western.....	gr 4.20, 60&60&10

Spring Hinges—

Acme.....	30
American.....	20
Bardsley's Patent Checking.....	25
Barnes' Double Acting.....	15
Bommer's Japanned.....	35
Bommer's All other Kinds.....	30
Buckman's.....	16&20
Champion.....	30
Chicago.....	30
Columbia.....	gr 1.00, 20
Covey.....	gr 1.00, 20
Devore, No. 1.....	gr 1.00, 20
Freepoint.....	gr 1.00, 20
Geer's Spring and Blank Butts.....	40
Gem.....	20
Ideal No. 3.....	gr 1.00, 20
J. G. C. Covered.....	gr 1.00, 20
Killam.....	gr 1.00, 20
New Idea No. 1.....	gr 1.00, 20
New Idea No. 2.....	gr 1.00, 20
New Idea Dbl. Acting.....	45
No. 10 Matchless.....	60
No. 25 Unbreakable.....	60
Oxford.....	20
Reliable.....	gr 1.00, 20
Rex.....	gr 1.00, 20
Royal.....	60
Samson.....	60&60&75
Stearns' Noiseless Floor Hinge.....	20&10&30
Surprise.....	gr 1.00, 20
Union Spring Hinge Co.'s list, March, 1886.....	20
Wiles, No. 1, gr 1.00, 20; No. 2.....	13

Wrought Iron Hinges—

Corrug'd Strap and T.....	60&10&10
Strap and T. List May.....	60&10&10&5
22, 1894.....	
Plate Hinges, 8, 10 & 12 in.....	60
Providence, over 12 in.....	60
Roll'd Blind Hinges, Nos. 82 and 84.....	50&10
Roll'd Blind Hinges, Nos. 282 and 284.....	50&10
Roll'd Plate.....	50&10
Roll'd Raised.....	70&10
Screw Hook and Eye.....	1/2 in., 1/2 in., 3/4 in., 1 in., 1 1/4 in., 1 1/2 in., 2 in., 2 1/2 in., 3 in., 3 1/2 in., 4 in., 4 1/2 in., 5 in., 5 1/2 in., 6 in., 6 1/2 in., 7 in., 7 1/2 in., 8 in., 8 1/2 in., 9 in., 9 1/2 in., 10 in., 10 1/2 in., 11 in., 11 1/2 in., 12 in., 12 1/2 in., 13 in., 13 1/2 in., 14 in., 14 1/2 in., 15 in., 15 1/2 in., 16 in., 16 1/2 in., 17 in., 17 1/2 in., 18 in., 18 1/2 in., 19 in., 19 1/2 in., 20 in., 20 1/2 in., 21 in., 21 1/2 in., 22 in., 22 1/2 in., 23 in., 23 1/2 in., 24 in., 24 1/2 in., 25 in., 25 1/2 in., 26 in., 26 1/2 in., 27 in., 27 1/2 in., 28 in., 28 1/2 in., 29 in., 29 1/2 in., 30 in., 30 1/2 in., 31 in., 31 1/2 in., 32 in., 32 1/2 in., 33 in., 33 1/2 in., 34 in., 34 1/2 in., 35 in., 35 1/2 in., 36 in., 36 1/2 in., 37 in., 37 1/2 in., 38 in., 38 1/2 in., 39 in., 39 1/2 in., 40 in., 40 1/2 in., 41 in., 41 1/2 in., 42 in., 42 1/2 in., 43 in., 43 1/2 in., 44 in., 44 1/2 in., 45 in., 45 1/2 in., 46 in., 46 1/2 in., 47 in., 47 1/2 in., 48 in., 48 1/2 in., 49 in., 49 1/2 in., 50 in., 50 1/2 in., 51 in., 51 1/2 in., 52 in., 52 1/2 in., 53 in., 53 1/2 in., 54 in., 54 1/2 in., 55 in., 55 1/2 in., 56 in., 56 1/2 in., 57 in., 57 1/2 in., 58 in., 58 1/2 in., 59 in., 59 1/2 in., 60 in., 60 1/2 in., 61 in., 61 1/2 in., 62 in., 62 1/2 in., 63 in., 63 1/2 in., 64 in., 64 1/2 in., 65 in., 65 1/2 in., 66 in., 66 1/2 in., 67 in., 67 1/2 in., 68 in., 68 1/2 in., 69 in., 69 1/2 in., 70 in., 70 1/2 in., 71 in., 71 1/2 in., 72 in., 72 1/2 in., 73 in., 73 1/2 in., 74 in., 74 1/2 in., 75 in., 75 1/2 in., 76 in., 76 1/2 in., 77 in., 77 1/2 in., 78 in., 78 1/2 in., 79 in., 79 1/2 in., 80 in., 80 1/2 in., 81 in., 81 1/2 in., 82 in., 82 1/2 in., 83 in., 83 1/2 in., 84 in., 84 1/2 in., 85 in., 85 1/2 in., 86 in., 86 1/2 in., 87 in., 87 1/2 in., 88 in., 88 1/2 in., 89 in., 89 1/2 in., 90 in., 90 1/2 in., 91 in., 91 1/2 in., 92 in., 92 1/2 in., 93 in., 93 1/2 in., 94 in., 94 1/2 in., 95 in., 95 1/2 in., 96 in., 96 1/2 in., 97 in., 97 1/2 in., 98 in., 98 1/2 in., 99 in., 99 1/2 in., 100 in., 100 1/2 in., 101 in., 101 1/2 in., 102 in., 102 1/2 in., 103 in., 103 1/2 in., 104 in., 104 1/2 in., 105 in., 105 1/2 in., 106 in., 106 1/2 in., 107 in., 107 1/2 in., 108 in., 108 1/2 in., 109 in., 109 1/2 in., 110 in., 110 1/2 in., 111 in., 111 1/2 in., 112 in., 112 1/2 in., 113 in., 113 1/2 in., 114 in., 114 1/2 in., 115 in., 115 1/2 in., 116 in., 116 1/2 in., 117 in., 117 1/2 in., 118 in., 118 1/2 in., 119 in., 119 1/2 in., 120 in., 120 1/2 in., 121 in., 121 1/2 in., 122 in., 122 1/2 in., 123 in., 123 1/2 in., 124 in., 124 1/2 in., 125 in., 125 1/2 in., 126 in., 126 1/2 in., 127 in., 127 1/2 in., 128 in., 128 1/2 in., 129 in., 129 1/2 in., 130 in., 130 1/2 in., 131 in., 131 1/2 in., 132 in., 132 1/2 in., 133 in., 133 1/2 in., 134 in., 134 1/2 in., 135 in., 135 1/2 in., 136 in., 136 1/2 in., 137 in., 137 1/2 in., 138 in., 138 1/2 in., 139 in., 139 1/2 in., 140 in., 140 1/2 in., 141 in., 141 1/2 in., 142 in., 142 1/2 in., 143 in., 143 1/2 in., 144 in., 144 1/2 in., 145 in., 145 1/2 in., 146 in., 146 1/2 in., 147 in., 147 1/2 in., 148 in., 148 1/2 in., 149 in., 149 1/2 in., 150 in., 150 1/2 in., 151 in., 151 1/2 in., 152 in., 152 1/2 in., 153 in., 153 1/2 in., 154 in., 154 1/2 in., 155 in., 155 1/2 in., 156 in., 156 1/2 in., 157 in., 157 1/2 in., 158 in., 158 1/2 in., 159 in., 159 1/2 in., 160 in., 160 1/2 in., 161 in., 161 1/2 in., 162 in., 162 1/2 in., 163 in., 163 1/2 in., 164 in., 164 1/2 in., 165 in., 165 1/2 in., 166 in., 166 1/2 in., 167 in., 167 1/2 in., 168 in., 168 1/2 in., 169 in., 169 1/2 in., 170 in., 170 1/2 in., 171 in., 171 1/2 in., 172 in., 172 1/2 in., 173 in., 173 1/2 in., 174 in., 174 1/2 in., 175 in., 175 1/2 in., 176 in., 176 1/2 in., 177 in., 177 1/2 in., 178 in., 178 1/2 in., 179 in., 179 1/2 in., 180 in., 180 1/2 in., 181 in., 181 1/2 in., 182 in., 182 1/2 in., 183 in., 183 1/2 in., 184 in., 184 1/2 in., 185 in., 185 1/2 in., 186 in., 186 1/2 in., 187 in., 187 1/2 in., 188 in., 188 1/2 in., 189 in., 189 1/2 in., 190 in., 190 1/2 in., 191 in., 191 1/2 in., 192 in., 192 1/2 in., 193 in., 193 1/2 in., 194 in., 194 1/2 in., 195 in., 195 1/2 in., 196 in., 196 1/2 in., 197 in., 197 1/2 in., 198 in., 198 1/2 in., 199 in., 199 1/2 in., 200 in., 200 1/2 in., 201 in., 201 1/2 in., 202 in., 202 1/2 in., 203 in., 203 1/2 in., 204 in., 204 1/2 in., 205 in., 205 1/2 in., 206 in., 206 1/2 in., 207 in., 207 1/2 in., 208 in., 208 1/2 in., 209 in., 209 1/2 in., 210 in., 210 1/2 in., 211 in., 211 1/2 in., 212 in., 212 1/2 in., 213 in., 213 1/2 in., 214 in., 214 1/2 in., 215 in., 215 1/2 in., 216 in., 216 1/2 in., 217 in., 217 1/2 in., 218 in., 218 1/2 in., 219 in., 219 1/2 in., 220 in., 220 1/2 in., 221 in., 221 1/2 in., 222 in., 222 1/2 in., 223 in., 223 1/2 in., 224 in., 224 1/2 in., 225 in., 225 1/2 in., 226 in., 226 1/2 in., 227 in., 227 1/2 in., 228 in., 228 1/2 in., 229 in., 229 1/2 in., 230 in., 230 1/2 in., 231 in., 231 1/2 in., 232 in., 232 1/2 in., 233 in., 233 1/2 in., 234 in., 234 1/2 in., 235 in., 235 1/2 in., 236 in., 236 1/2 in., 237 in., 237 1/2 in., 238 in., 238 1/2 in., 239 in., 239 1/2 in., 240 in., 240 1/2 in., 241 in., 241 1/2 in., 242 in., 242 1/2 in., 243 in., 243 1/2 in., 244 in., 244 1/2 in., 245 in., 245 1/2 in., 246 in., 246 1/2 in., 247 in., 247 1/2 in., 248 in., 248 1/2 in., 249 in., 249 1

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Pullers Nail-

Colpase, 24.00, 40%
 Economy, 25.50, 40%
 Ellrich, 26.00, 40%
 Giant, No. 1, 28.00, 40%
 Giant, No. 2, 28.00, 40%
 Pelican, 29.00, 40%
 Seranton, 29.00, 40%

Pulleys-

Brass Screw, 70%
 Hay Fork, "Anti-Friction," 5 in. solid, 50%
 Hay Fork, "F" Common and Patent, 20%
 Hay Fork, Moore's Anti-Friction 5 in. Wheel, 12.00, 40%
 Hay Fork, Reed's Self-Lubricating, 60%
 Hay Fork, Solid Eye, 24.00, 40%
 Hay Fork, Stearns' Nos. 35 & 45, 60%
 Hay Fork, Stearns' Nos. 15, 25, 50, 60%
 Hay Fork, Tarnox Pat. Iron, 60%
 Japanned Clothes Line, 60%
 Japanned Screw, 70%
 Japanned Side, 70%
 Moore's Ceiling or End, Anti-Friction, 40%
 Moore's Dumb Walter, Anti-Friction, 50%
 Moore's Electric Light, 30%
 Moore's Side, Anti-Friction, 50%
 Bash (Auger Mortise), 60%
 Common Sense, 60%
 Empire, 60%
 Aome, 60%
 Ideal, Nos. 2, 4, 10 & 15, 60%
 Ideal, or IXL No. 60, 22% net.
 On bbl. lots extra 5%
 Shade Rack, 45%
 Shepard's Niagara, No. 25, 23% net
 Tackle Blocks-See Blocks.

Pumps-

Clatern, Beat Makers, 60%
 Pitcher Spout, Beat Makers, 70%
 Pitcher Spout, Cheaper Gds., 75%
 Myers' Pumps, low list, 50%

Punches-

Avery's Revolving, 40%
 Avery's Sawcut Punch-See Sawsets
 Bemis & Call Co.'s Cast Steel Drive, 50%
 Bemis & Call Co.'s Check, 55%
 Bemis & Call Co.'s Spring, 50%
 Bemis & Call Co.'s Springfield Socket, 55%
 Niagara Hollow Punches, 20%
 Niagara Solid Punches, 15%
 Rice Hand Punches, 15%
 Reddler's or Drive, good, 60%
 Spring, good quality, 25%
 Spring, Leach's Pat., 15%
 Solid Tinnars', P. S. & W. Co., 25%
 Tinnars' Hollow Punches, P. S. & W. Co., 25%

Rail-

Barn Door, Light, 1 in. 1.75 2.10 2.75
 B. D. for N. E. Hangers- 2.00 2.50 3.00 Net
 Per 100 feet, Small, Med. Large.
 Carrier, double braced, Steel Rail, 3.50
 foot
 Lundy Parlor Door, Planed Edge, 6 ft. 7.50
 Moody Steel Rail, 5 ft. 5.50
 Moore's Steel Rail, 3.50
 Sliding Door, Brn. Wt. Iron, 3.50
 Sliding Door, Iron, Painted, 3.50
 Sliding Door, Wrt. Brn. 3.50
 Terry's Steel Rail, 3.50
 Victor Track Rail, 7 ft. 5.00

Rakes-

Cast Steel, Association Gds., 70%
 Cast Steel, outside goods, 70%
 Malleable, good, 70%
 Malleable, low grade, 75%
 Fort Madison Prize Bow Brace and Peerless, 55%
 Fort Madison Steel Tooth Lawn Rake, 50%
 Gibbs, 25%
 Gibbs' Aome Lawn Rake, 25%
 Gibbs' Canton Lawn Rake, 35%
 Gibbs' Crown Lawn Rake, 35%
 Gibbs' Favorite Lawn Rake, 35%
 Gibbs' Hustler No. 0, 35%
 Gibbs' Hustler No. 1, 35%
 Onelda Lawn Rake, 35%

Razors-

Campbell Cutlery Co., 60%
 Electric Cutlery Co., Net prices
 Galvanic, 25%
 Jordan's A. A. L. new list, 15%
 Jordan's Old Faithful, new list, Net prices
 J. B. Torrey Razor Co., Net prices
 Wostenholm and Butcher, 10 to 25%

Razor Strops-

See Strops, Razor.

Reels

Stearns', 33% & 10%

Fishing-

Henry's Aluminum, German Silver, Gold, Bronze, Silver Rubber, Popolo and Salmon, Single Action, Multiplying and Quadruple, all sizes, 25%
 Henry's Single Action Series, 102P and PN, 202P and PN, 102PR and PN, 202PR and PN, 502 and 502N, 802 and 82N, 02084N, Competitor, 50%
 Henry's Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 020904PN, 0924 and 0924N, 5000N and PN, 40% & 10%

Registers-

Moore's Bronze Finishes, 75%
 Moore's Electroplated, 80%
 Moore's Japanned, 80%
 Moore's Solid Bronze, 70%
 Moore's Stove Pipe, 33%

Rings and Ringers-

Hutchkiss' low list, 40%
 Humason, Beckley, 75%
 Peck, Stow & W. Co., 60%
 Sargent's, 80%

Hog Rings and Ringers-

Note-The market on Hog Rings and Ringers is in a demoralized condition and prices are low and irregular. We therefore withdraw quotations for the present.

Rivets and Burrs-

Copper, 60%
 Coppered Iron, Betina Brand, 50%
 Iron Norway, list Nov. 17, 75%
 Second Quality, 70%

Rivet Sets-See Sets.**Roasting and Baking Pans-See Pans, Roasting and Baking.****Rods-**

Stair, Black Walnut, 40%
 Stair, Brass, 25%

Rollers-

Aome Moore's Anti-Friction, 50%
 Barn Door, Sargent's list, 60%
 Moore's Barn Door Stay, 50%
 Union Barn Door Roller, 70%
 Thompson Mfg. Co.'s Lawn Rollers, 30%

Rope-The following prices are f.o.b.

New York or factory, and are shaded 1/4% on large lots; terms, 1 1/4% for cash.
 Manila, 7-16 in. diam. and larger, 8 1/4%
 Manila, 1/4 in. to 3/4 in., 8 1/4%
 Manila, 1/2 in. to 5/8 in., 9 1/4%
 Manila, Tanned Rope, 7 1/4%
 Manila, Hay Rope, Med'm, 8 1/4%
 Sisal, 7-16 in. and larger, 5 1/4%
 Sisal, 1/4 in. to 5/8 in., 6 1/4%
 Sisal, Hay Rope, 6 1/4%
 Sisal, Tanned Rope, 6 1/4%
 Sisal, Medium Lath Yarn, 6 1/4%
 New Zealand, 7-16 in. and larger, 5 1/4%
 New Zealand, 1/4 in. to 5/8 in., 6 1/4%
 New Zealand, 1/2 in. to 5/8 in., 6 1/4%
 New Zealand, Hay Rope, 5 1/4%
 New Zealand, Tanned Rope, 4 1/4%
 Cotton Rope, 12 to 15%
 Jute Rope, 6 1/4%

Wire Rope-

List Sept. 1, 1894. All kinds. 20% & 2 1/2% cash

Rules-

Boxwood, 80%
 Starrett's Steel Rules and Straight Edges, 25%
 Iron, 25%

Sad Irons-See Irons, Sad.**Sand and Emery Paper and Cloth-See Paper and Cloth.****Sash Cord-See Cord, Sash.****Sash Locks-See Locks, Sash.****Sash Weights-See Weights, Sash.****Sausage Stuffers or Fillers-See Stuffers or Fillers.****Saws-**

Note-Extra 50% often given.
 Atkins' Circular, 50%
 Atkins' Band, 50%
 Atkins' Cross Cut, new list, 40%
 Atkins' Mulay, Mill and Drag, 50%
 Atkins' One Man Saw, 40%
 Atkins' Wood Saws, 40%
 Atkins' Hand Compass, 40%
 Diston's Circular, 40%
 Diston's Cross Cut, list Jan. 1, 1893, 40%
 Diston's Hand, 25%
 C. E. Jennings & Co.'s, 25%
 Peace Circular and Mill, 45%
 Peace Cross Cuts, list Jan. 1, 1893, 45%
 Peace Hand, Panel and Rip, 25%
 Richardson's Circular and Mill, 45%
 Richardson's Cross Cuts, list Jan. 1, 1893, 45%
 Richardson's Hand, 25%
 Simonds' Circular Saws, 45%
 Simonds' Crescent Ground Cross Cut Saws, 30%
 Simonds' One Man Cross Cuts, 40%
 Simonds' Gang, Mill, Mulay and Drag Saws, 45%
 Wadsworth, Madden & Clemson Mfg. Co., 45%
 Cross Cuts, list Jan. 1, 1893, 45%
 Hand, Panel and Rip, 30%
 Woodrough & McFarlin, 45%
 Cross Cuts, list Jan. 1, 1893, 45%
 Hand, Panel and Rip, 25%

Hack Saws-

Eureka and Crescent, 25%
 Griffin's, complete, 40%
 Griffin's Hack Saw Blades, 40%
 Star Hack Saws and Blades, 25%

Scroll

Barnes' No. 1, 35%
 Barnes' No. 6, 10%
 Barnes' No. 7, 15%
 Barnes' Scroll Saw Blades, 35%
 Rogers, complete, 40%
 Rogers, complete, 40%

Saw Frames-

See Frames, Saw.

Saw Sets-See Sets, Saw.**Saw Tools-See Tools, Saw.****Scale Beams-See Beams, Scale.****Scales-**

Chatillon's Eureka, 25%
 Chatillon's Favorite, 40%
 Chatillon's Grocers' Trip Scales, 50%
 Family Turnbills, 30%
 Hatch, Counter, No. 171, good quality, 40%
 Hatch Tea, No. 161, 40%
 Kiehle Bros' Platform, 40%
 Union Platform Plain, 25%
 Union Platform, Striped, 25%
 Standard, 50%

Scissors, Fluting-

Adjustable Box Scraper (S. R. & L. Co.), 40%
 Box, 1 Handle, 40%
 Box, 2 Handle, 40%
 Defence Box and Ship, 20%
 Foot, 50%
 Ship, Common, 40%
 Ship, R. Tool Co., 40%
 Tatum's Box, 25%

Screen Window and Door Frames-See Frames.**Screw Drivers-**

See Drivers, Screw.

Screws-

Bench and Hand, 55%
 Bench, Wood, 55%
 Bench, Wood, Hickory, 20%

Hand, Wood, 25% & 10% & 25% & 10% & 25% & 10%**Hand, Grand Rapids, list, 35%****Coach, Lag and Hand-Rail-**

Lag, Blunt Point, list Jan. 1, 1890, 85%
 Coach and Lag, Gimlet Point, list Jan. 1, 1890, 85%
 Hand Rail, Am. Screw Co., 50%
 Hand Rail, B. & M. Co., 75%
 Hand Rail, Sargent's, 70%
 Jack Screws, 50%
 Millers Falls, 50%
 Millers Falls, Koller, 50%
 P. S. & W., 35%
 Sargent, 70%
 Tatum's, 25%

Cork-

Detroit Cork Screw Co., 33%
 Humason & Beckley Mfg. Co., 40%
 Williamson's, 33%
 Williamson's Forged Worn, Applewood Handle, 40%
 Wood, 55%

Machine-

List August 1, 1894.

Wood-

List January 1, 1891.

Flat Head Iron, 45%**Round Head Iron, 40%****Flat Head Brass, 75%****Round Head Brass, 75%****Flat Head Bronze, 80%****Round Head Bronze, 75%****Rogers' Drive Screws, 87%****Scroll Saws-See Saws, Scroll.****Scythes-**

Grain, 40%
 Grass, 40%

Scythe Snaths-See Snaths, Scythe.**Sets-Awl and Tool-**

Alken's Sets, Awl and Tools, 60%
 No. 20, 10%
 Common Brad Sets, 60%
 No. 42, 10%
 Fray's Adj. Tool Hds., Nos. 1, 12, 2, 18, 3, 12, 4, 3, 5, 7, 50%
 Henry's Combination Hdt., 50%
 Millers Falls Adj. Tool Hds., No. 1, 12, 2, 18, 3, 12, 4, 3, 5, 7, 50%
 Stanley's Excelsior, 50%
 No. 1, 75%
 No. 2, 40%
 No. 3, 50%
 No. 4, 50%

Nail-

Round, 35%
 Square, 35%
 Cannon's Diamond Point, 35%

Rivet-

Regular list, 70%

Saw-

Atkins' Criterion, 50%
 Atkins' Genuine, 50%
 Atkins' Imitation, 50%
 Atkins' Lever, 50%
 Avery's Saw Set and Punch, 50%
 Bemis & Call Co.'s Cross Cut, 50%
 Bemis & Call Co.'s Panel, 50%
 Bemis & Call Spring Hammer, 50%
 Common Lever, 50%
 Crescent, 50%
 Croissant (Keller), No. 1, 50%
 No. 2, 50%
 Diston's Star, 50%
 Hammer, Bemis & Call Co.'s new, 50%
 Hammer, Hotchkiss, 50%
 Hart's Pat. Lever, 50%
 Kohler's Giant Royal, 50%
 Kohler's Royal, 50%
 Leach's, No. 0, 50%
 Leopold, 50%
 Morrill's No. 1, 50%
 No. 3 and 4, Cross Cut, 50%
 No. 5, Mill, 50%
 No. 10, 50%
 No. 11, 50%
 Nash's, 50%
 Stillman's Genuine, 50%

Sharpeners, Knife-

Applewood Handles, 50%
 Rosewood or Cocobola, 50%
 Tanite Mills, 50%

Shaves, Spoke-

Iron, 45%
 Wood, 45%
 Bailey's (Stanley R. & L. Co.), 50%
 Cincinnati, 25%
 Goodell's, 25%
 Stearns', 40%
 Tatum's, 25%

Shears-

Acme's, 40%
 American (Cast) Iron, 40%
 Barnard's Lamp Trimmers, 40%
 Barnard, Solid Steel Blade, Jap'd, 75%
 Barnard, Solid Steel Blade, Nickeled, 75%
 Cast Steel Trimmers, 40%
 First quality, 80%
 Second quality, 80%
 Campbell, Outlier, Co. Jap'd, 75%
 Nickel Plated, 65%
 Claus brand, Japanned, 70%
 Claus brand, Nickeled, same list, 60%
 Clipper, 10%
 Davenport Co. Iron, 40%
 Diamond Cast Shears, 10%
 Elipsee, 40%
 galvanic 3/4 to 1 1/2, 40%
 Hatch Outlier Co. Solid Steel Forged, 60%
 Heinisch's, list Dec. 1891, 80%
 Heinisch's Tailor's Shears, 35%
 Bros. & Hulbert, Solid Forged, 40%
 Seymour's, list Dec. 1891, 60%
 Victor Cast Shears, 75%

Tinnars' Snips-

Cast Handles, Laid with Steel, 40%
 Niagara Snips and Shears, 20%
 Steel Laid, Claus, 70%
 Wrt. Handles, Steel Blades, 20%

Pruning Shears and Hooks-

Diston's Combined Pruning, 50%
 and Saw, 50%
 Diston's Pruning Hook, 50%
 Dunlap's Saw and Chisel, 50%

Henry's Pruning Shears, 2 doz. 24.00

Henry's Tree Pruner, 50%
 E. S. Lee & Co.'s Pruning Tools, 50%
 Levin Pruner No. 1, 50%
 Levin Pruner No. 2, 50%
 J. Mallinson & Co., No. 1, 50%
 Pruning Shears, Henry's Pat., 50%
 Pruning Shears, Conn. Pat., 50%
 P. S. & W. Co., 50%
 Wheeler, M. & O. Co., Combination, 50%

Tinnars' &c.-

Shears and Snips (P. S. & W.), 20%
 Snips, J. Mallinson & Co., 20%

Sheaves-

Corbin's list, 60%
 M. W. Co., list July 1893, 60%
 Moore's Anti-Friction, 60%
 Patent Roller, 60%
 Patent Roller, Hand Made, 60%
 R. & E., list Dec. 18, 1885, 55%
 Russell's Anti-Friction, list Dec. 18, 1885, 60%

Sliding Shutter-

Reading list, 60%
 R. & E., list Dec. 18, 1885, 60%
 Sargent's list, 70%

Shells

Brass Shot Shells, Club, Rival, Climax, 65%
 First quality 2, 8, 10 and 12 gauge, 25%
 First quality Rival, Club and Climax brands, 14, 16 and 20 gauge, 25%
 List, 20%
 Prize, 40%
 Smokeless brand, 12, 10, 16 gauge, 35%
 Star, Club, Rival and Climax Brands, 35%
 Trap brand, 12 and 10 gauge, 35%

Shells, Loaded-

Standard List, July 19, 1890, 40%
 40% & 10% & 40% & 10% & 40% & 10%

Ship Tools-

L. & I. J. White, 20%

Shoes, Horse Mule, &c.-

Burden's, Perkins', Phoenix, Standard, Shoenberger's, Diamond State, Old Dominion, Bryden's Boss and Crescent, from jobbers, \$1.40 @ \$1.75
 Bryden's Frog Pressure, \$1.40

Mule-

Add 50 cents per keg to above prices.

Ox Wrought-

Ton lots, 50%
 1000 lb lots, 50%
 500 lb lots, 50%

Shot-

Drop, up to 1/2, 25-b bag, \$1.10
 Drop, up to 1/2, 6-b bag, \$1.10
 Drop, B and larger, 25-b bag, 1.40
 Drop, B and larger, 5-b bag, .35
 Buck and Chilled, 25-b bag, 1.40
 Buck and Chilled, 5-b bag, .35
 Dust Shot, 25-b bag, 1.75
 Dust Shot 5-b bag, .40

Shovels and Spades

Ames' Shovels, Spades, &c., list Nov. 1, 1885 (Except Nos. named below), 20%
 The following Nos. are subject to a discount of 27%: Nos. 543 to 572; 580 to 589; and Nos. 1004, 1009, 1014, 1019, 1024, 1027 and 1029.
 Griffith's Black Iron, 50%
 Griffith's C. S., 60%
 Griffith's Solid C. S. R. R. Goods, 20%
 Hubbard & Co., Antrim list, 25%
 Hubbard & Co's. Chisholm Pattern, 50%
 Hussey, Blans & Co., 15%
 H. M. Myers Co., 15%
 Lehigh Mfg. Co., 50%
 St. Louis Shovel Co., 20%
 Payne Petebone & Son, 85%
 Remington's (Lowman's) Pat., 40%
 Rowland's Black Iron, 60%
 Rowland's Steel, 60%
 Terre Haute Shovel & Tool Co., 25%

Shovels and Tongs

Brass Head, 60%
 Iron Head, 60%

Sieves and Sifters-

A. W. Sifters, 40%
 Buffalo Metallic, S. S. & Co., 50%
 Electric Light, 50%
 Hunter's Genuine, 50%
 Hunter's Imitation, 50%

Mann's Tin Rim

Shaker (Barber's Pat.) Flour Sifters, 50%

Sieves, Wooden Rim-

Mesh 18, Nested, 30%
 Mesh 20, Nested, 30%
 Mesh 24, Nested, 30%

Sinks

Standard list, 65% & 10%

Wrought Steel-

Columbus, Galvanized and Enamelled, 50%
 Columbus Painted, 50%
 New Era, Painted, 50%
 New Era Galvanized and Enamelled, 50%

Skelins, Thimble-

Western list, 75%
 Coldbrookdale Iron Co., 60%
 Columbus Wrt. Steel, Special net prices, 50%
 Seneca Falls Pattern, 75%
 Utica P. S. T. Skelins, 60%
 Utica Turned and Fitted, 85%

Slates

School, by case, 50%
 Large lots, 50%

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Miscellaneous—
Double End Nails..... 85¢10a85¢10a12
Wire Carps Nail..... 10¢10¢10¢10¢10¢10¢
Bill Nye Brad Box..... 10¢10¢10¢10¢10¢10¢
Bonnie Blue..... 10¢10¢10¢10¢10¢10¢
Claw Handle Carpet..... 10¢10¢10¢10¢10¢10¢
Home Tacks, No. 50, 5¢ case (12 car-
tons), \$36.00, No. 100, 5¢ case
(12 cartons), \$72.00
Home Nails, No. 200, 4¢ case (12 car-
tons), \$30.00, No. 400, 4¢ case (12
cartons), \$60.00
Farlan Gilt Nails, cartoon..... 10¢10¢10¢10¢10¢10¢
Parlath Rock Carpet Tacks..... 10¢10¢10¢10¢10¢10¢
Upholsterers' Nails..... 10¢10¢10¢10¢10¢10¢
Wire Brads and Nails
Steel-Wire Brads, R. & E. Mfg. Co.'s list..... 50¢10a10¢
See also Nails, Wire.
Tanks Oil—
Embossed S. S. & Co.: 80-gal. \$3.75; 60-
gal. \$11.00 each..... 50¢10a10¢
Tapes, Measuring—
American..... 10¢10¢10¢10¢10¢10¢
Chesterman's, Regular list..... 30¢30¢
Excelstor, Special list..... 30¢30¢
Spring..... 10¢10¢10¢10¢10¢10¢
Thermometers—
Tinscase..... 80¢80¢10¢
Thimble Skins—See Skins
Ties—
Steel..... 10¢10¢10¢10¢10¢10¢
Standard Wire list..... 50¢10a10¢
Tinners' Shears, &c—
See Shears, Tinners' &c.
Tinware—
Stamped, Japanned and Plead, List
Jan 20, 1887..... 70¢10a70¢25¢
Tire Benders, Upsetters
&c.—See Benders and Upsetters
Tire.
Tobacco Cutters—
See Cutters, Tobacco.
Tools—Coopers—
Albertson Mfg. Co..... 25¢
Barton's..... 30¢20a5¢
Beatty's..... 33¢
L. B. Finch..... 30¢30¢5¢
Sandusky Tool Co..... 30¢30¢5¢
Shaves Cincinnati Tool Co..... 20¢
L. & J. White..... 20a5¢
Lumber—
Cant Hooks, "Blue Line"..... 5¢ doz \$15.00
Cant Hooks, Common Finish..... 5¢ doz \$14.00
Cant Hooks, Mail Socket Clasp, "Blue
Line" Finish..... 5¢ doz \$15.00
Cant Hooks, Mail Socket Clasp, Com-
mon Finish..... 5¢ doz \$14.50
Cant Hooks, Clip Clasp, "Blue Line"
Finish..... 5¢ doz \$14.00
Cant Hooks, Clip Clasp, Common Fin-
ish..... 5¢ doz \$12.00
Hand Spikes..... 5¢ doz 6 ft., \$15.00; 8 ft.,
\$20.00
Pike Poles, Pike & Hook, 5¢ doz, 12 ft.,
\$11.50; 14 ft., \$12.50; 16 ft., \$14.50;
18 ft., \$17.50; 20 ft., \$21.50
Pike Poles, Pike only, 5¢ doz, 12 ft.,
\$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18
ft., \$16.00; 20 ft., \$20.00
Pike Poles, not ironed, 5¢ doz, 12 ft.,
\$6.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft.,
\$12.00; 20 ft., \$16.00
Mail, Iron Socket Peavies..... 5¢ doz \$18.00
Ring Peavies, "Blue Line"..... 5¢ doz \$20.00
Ring Peavies, Common..... 5¢ doz \$18.00
Steel Socket Peavies..... 5¢ doz \$21.00
Setting Poles, 5¢ doz, 12 ft., \$14.00; 14
ft., \$16.00; 18 ft., \$17.00.
Swamp Hooks..... 5¢ doz \$18.00
Champion Steel Socket Peavies—
Maple Handles, 2½ in. x 4½
to 6 ft..... \$24.00
Maple Handles, 2¾ in. x 4½
to 6 ft..... 26.50
Maple Hndls, 3 in. x 4½ to 6 ft. 29.00
Champion Solid or Split Socket
Peavies.....
Maple Handles, 2½ in. x 4½
to 6 ft..... \$21.00
Maple Handles, 2¾ in. x 4½
to 6 ft..... 23.50
Maple Hndls, 3 in. x 4½ to 6 ft. 26.00
Champion Cant Hooks, with steel
handles.....
Maple Handles, 2½ in. x 4, 4½
or 5 ft..... \$20.00
Maple Handles, 2¾ in. x 4, 4½
or 5 ft..... 21.50
Maple Handles, 3 in. x 4, 4½
to 5 ft..... 23.50
Champion Cant Hooks, with
malleable cases..... 17.50
Maple Handles, 2½ in. x 4 to 5 ft. 17.50
Maple Handles, 2¾ in. x 4 to 5 ft 19.50
Champion Lug Hooks..... 28.00
Champion Skedding Tongs..... 22.00
Champion Swamp Hooks..... 22.00
Champion Picket Pole, Poles, Ironed com-
plete, 12 to 20 ft..... 45¢
Cant Hook and Peavy Handles..... 46¢
Saw—
Atkins', new list..... 40¢
Simonds'..... 38¢
Transom Lifters—
See Lifters, Transom.
Traps—Game—
Blake's Patent..... 50¢10a60¢
Newhouse..... 40¢10a50¢50¢
Hensel's Patent..... 75¢75¢10a75¢
Sensible..... 33¢
Mouse and Rat
Dysons..... 75¢25¢\$5.75
Jancy..... 10¢
French Traps (Genuine), No. 1, Rat, 5¢
doz., \$15; No. 3, Rat, \$7.25; No. 4, Mouse,
\$4.75; No. 5, Mouse..... \$3.75
Hotchkiss metallic mouse, 5-hole traps
5¢ doz, 75¢; in full cases, 5¢ doz. 60¢60¢
Hotchkiss Metal Killer..... 5¢ doz \$18.50
Hotchkiss New Rat Killer..... 5¢ doz \$16.50
Ideal..... 5¢ doz \$9.00
Mouse, Bonanza..... 5¢ doz 0.90¢10a10¢
Mouse, Cage, Wire..... 5¢ doz \$2.50 10¢
Mouse, Catch-em-alive..... 5¢ doz \$2.50 10¢
Mouse Wood, Choke..... 5¢ doz \$1.50 10¢
Mouse, Wire, Fire..... 5¢ doz \$1.50 10¢
Mouse, Sensible..... 33¢
Rat, Decoy..... 5¢ doz \$10.00 10¢
Rat, Sensible..... 33¢
Rochley's Rat Killer..... 5¢ doz \$15.00
Vaddell's Go Bang, 5¢ doz..... \$12.50
Fly—
Balloon, Globe or Acme..... 5¢ doz \$1.50, 5¢ doz \$13.50
Harper, Champion Fly..... 5¢ doz \$1.75, 5¢ doz \$16.50
Triers—
Butter and Cheese..... 25¢

Trimmers. Spoke-
Bonney's No. 1, 3 doz., \$5; No. 2, \$7. 40@40 £10
Ives', No. 1, \$15.00; No. 2, \$12.00. 50@50
Stearns'..... 20@20
Douglas'..... 20@20
Cincinnati..... 25@10
Trowels-
Brade's Brick..... 25@25
Crown's Brick & Plastering..... 20@20
Disston's Brick & Plastering..... 25@25
Lothrop's Brick and Plastering..... 20@10
Pease's Plastering..... 25@25
Reed's Brick and Plastering..... 15
Worral's Brick and Plastering..... 25@20
Clevae's Angle Trowel, 7/8 gro. No. 1, \$3.8; No. 2, \$3.0; No. 3, \$1.5. net 10
Garden..... 70
Trucks, Warehouse, &c.
B. & L. Block Co.'s Hat..... 40
Barner Barrel Trucks..... 40
Daisy Stove Trucks, Improved pattern, 3 doz., \$18.00
Thomson Mfg. Co
Tubes, Boiler-
See Pipe
Twine-
Flax Twine..... BC. B
No. 9, 1/4 and 1/2 Balls..... 22@22
No. 12, 1/4 and 1/2 Balls..... 18@18
No. 18, 1/4 and 1/2 Balls..... 17@17
No. 24, 1/4 and 1/2 Balls..... 17@17
No. 36, 1/4 and 1/2 Balls..... 16@16
Chalk Line, Cotton, 1/4 B Balls..... 17
Cotton Mow, 6, 9, 12 & 15 m to doz., 15@17
Cotton Wrapping, 5 Balls to lb., 13@14
2-Ply Hemp, 1/4 and 1/2 B Balls (Spring Twine)..... 10@10
3-Ply Hemp, 1/4 B Balls..... 10@10
2, 3, 4 and 5 Ply Jute, 1/4 B Balls..... 8
Cotton Line, Linen, 1/4 B Balls..... 64
No. 20 Mattress, 1/4 and 1/2 B Balls (Spring Paper)..... 10@11
Wool..... 5@5
Vises-
Solid Box..... 50@100
Parallel-
Backus and Union..... 40
Bonney's..... 45@50
Double Screw Leg..... 15@15
Fisher & Norris Double Screw..... 15@15
Hollands'..... 35@40
Howard's..... 40
Massey Quick Action..... 20@25
Merrill's..... 15@20
Miller's Falls..... 40@40
Moore's..... 20@25
Parker's..... 20@25
Prentiss..... 20@25
Sargent's..... 70@100
Simpson's Adjustable..... 25@30
Trenton..... 40@50
Wilson's..... 65
Saw Filers-
Bonney's Nos. 2 & 3, \$15.00..... 45@50
Cincinnati..... 25@10
Economy, 7 doz., Nos. 110, \$10.00, 120, 150, \$10.00, 108@108
Hopkins'..... 20@25
Reading..... 20@25
Stearns' Common, Nos. 0, 1, 2 & 3..... 50
Stearns' Rubber Jaw, Nos. 10 & 33, 38@38
Wentworth..... 20@10
Miscellaneous-
Bauer's Pipe Vises..... 10
Enterprise Pipe Vises..... each \$3.00, 40
Massey Combination Pipe Vise..... 35@40
Phoenix Vises..... 35@40
Phoenix Hand Vises..... 20@30
Wads-Price Per M.
U.M.C. & W.R.A.-B. E. 11 up..... 60@
U.M.C. & W.R.A.-B. E. 9&10..... 70@
U.M.C. & W.R.A.-B. E. 8..... 80@
U.M.C. & W.R.A.-B. E. 7..... 80@
U.M.C. & W.R.A.-P. E. 11 up..... 31.00
U.M.C. & W.R.A.-P. E. 9&10..... 1.25
U.M.C. & W.R.A.-P. E. 8..... 1.50
Eley's B. E. 11 and larger..... \$1.70
Eley's P. E. 12 to 20..... \$3.00
Wagon Boxes-
See Boxes, Wagon.
Wagon Jacks-
See Jacks, Wagon.
Ware, Hollow-
Cast Iron, Hollow-
Stove Hollow-Ware..... 60@100
Ground..... 70@75
Unground..... 70@75
Enameled Ware-
Stove..... 50@55
Maslin Kettles..... 60@100
Boilers and Saucepans..... 40@50
White Enameled Ware-
Maslin Kettles..... 70@100
Boilers and Saucepans..... 60@100
Reekless Hollow Ware..... 60@100
Tinned Boilers and Saucepans..... 60@100
Enameled
Agate and Granite Ware, list Jan. 1, 1894..... 25
Ironclad Enameled Ware, Old list..... 50@100
Kettles-
Inch..... 6 7 8 9
Each..... 55 60 65 75
Steel Hollow Ware-
Avery Siders and Griddles 60, 10&5@70
Avery Kettles and Boilers 60, 10&5@70
Standard Fiber-
Per Doz.
Plain, Decorated..... \$7.50
Ouspidors.....
Half-peck Measure..... \$3.00
Peck Measure..... 8.50
Keelers, 12 in..... 8.50
Spittoons, "Do"..... 1.80
Wash-Basins, 10 1/2 in..... 2.00
Wash-Basins, 12 in..... 2.50
See also Pails.
Indurated Fiber-
Basins, Ringed, 7 doz., No. 2..... 1.60
Butter Bowls 15, 17 and 19-inch (3 pieces), 7 nest..... \$1.60
Keelers Nested, No. 2, 3 and 4 (4 pieces), 7 nest..... \$2.55
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces), 7 set..... \$1.20
Spittoons No. 2, 7 doz..... \$4.80
Washbuds, Nested, Nos. 0, 1, 2, and 3 (4 pieces), 7 nest..... \$5.75
See also Pails.

Silver Plated, Hollow-
4 mo. or 5 % cash in 30 days.
Meriden Britannia Co. 40¢
Reed & Barton 40¢
Rogers & Brother 40¢
Simpson, Hall, White & Co. 40¢
Hartford Silver Plate Co. 40¢
William Rogers Mfg. Co. 40¢

Washers-

Size hole.....5-16 3/4 1/2 3/4 1 1/2
Washers.....4.30 3.30 2.55 2.30
In lots less than 2000, # 2, add 1/4, # 3, add 1/2 boxes 16 to list.

Whips

American Whip Co.: Length.	4 1/2	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalebone Driv'n	\$18.00	20.00	22.00	24.00	27.00	30.00	36.00
Whalebone, Two-thirds Whalebone.	15.00	16.50	18.00	20.00	22.00	24.00	28.00
Bull Bone, Half-length Whalebone.	11.00	12.00	13.00	15.00	16.00	18.00	20.00
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	8.00	9.00
New Name, Stocked Java, Black and Wine Colors	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Americus, 98 Fm Whip	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Gente Light Driving No. 111	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Gente Light Driving No. 106	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Hand-made Stocked Java No. 103	8.75	4.00					
A large variety of cheaper grades							
Team Whips							
Toy Whips							
Hardware Assortment, American, 7 1/2 Whips for \$50.00							

Whips and Wire Goods—Iron

Br. & Ann. Nos. 0 to 18. Extra 5¢/10¢ often given and low net prices often made on large lots.
Cop'd, Nos. 0 to 18. 75¢/10¢/80¢
Gent's, Nos. 0 to 18. 75¢/10¢/80¢
Gent's, Nos. 0 to 18. 75¢/10¢/80¢
Tind. Tind. Nos. 0 to 18. 75¢/10¢/80¢

Washer Cutters—

See Cutters, Washers.

Water Coolers—

See Coolers, Water.

Wedges—

See Wedges, Sash.

Weights Sash—

Ton lots at factory \$14.00 to \$15.00

Well Buckets Galvan-

Ized—See Pails, Galvanized.

Well Buckets Galvan-

Ized—See Pails, Galvanized.

Well Buckets Galvan-

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Well Buckets Galvan-

Ized—See Pails, Galvanized.

Well Buckets Galvan-

Ized—See Pails, Galvanized.

Cast Steel Wire.....50¢
Copper, Hot Jan. 18, 1884.....40¢
Galvanized Fence.....75¢
Mail's An'led & Tin'd on Spools.....60¢
Mail's An'led & Tin'd on Spools.....50¢
Steel Music Wire, 12 to 30, imported.....60¢
Stubs' Steel Wire.....\$6.00 to \$2.30
Tate's Spooled, Tin'd & Annealed.....60¢
Tate's Spooled, Tin'd & Annealed.....50¢
Tate's Spooled, Tin'd & Annealed.....40¢
Wire Clothes Line, see Line.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....90¢/90¢/15¢

Wire Cloth and Netting—

Galvanized Wire Netting.....80¢/80¢/10¢/15¢

Painted Screen Cloth # 100 ft \$1.40 to \$1.45

Wire Barb—

See Trade Report.

Wire Rope—See Rops. Wrs.**Wrenches—**

American Adjustable.....40¢/40¢/10¢

Baxter's Adjustable "S".....40¢/40¢/10¢

Baxter's Diagonal.....60¢/60¢/10¢

Coe's "Mechanics".....50¢/50¢/10¢

Girard Standard.....65¢/65¢/10¢

Lamson & Sessions' Engineers'.....60¢/60¢/10¢

Lamson & Sessions' Standard.....70¢/70¢/10¢

Lamson & Sessions' Agricultural.....75¢/75¢/10¢

Lamson & Sessions' Agricultural.....80¢/80¢/10¢

W. & B. Diamond.....50¢/50¢/10¢

Acme, Bright.....50¢/50¢/10¢

Acme, Nickel.....40¢/40¢/10¢
Aiken's Pocket (Bright).....\$2.50 to \$2.60
Alligator.....60¢/60¢/10¢
Always Ready.....83¢/83¢/10¢/15¢

Bemis & Call's:

Adjustable S.....35¢/35¢/10¢

Brigg's Pattern.....30¢/30¢/10¢

Combination Black.....40¢/40¢/10¢

Combination Bright.....40¢/40¢/10¢

Cylinder or Gas Pipe.....45¢/45¢/10¢

Extra Heavy.....45¢/45¢/10¢

Marick's Pattern.....45¢/45¢/10¢

No. 8 Pipe Bright.....55¢/55¢/10¢

Bit Wrench, Adj., Tatum's.....\$2.25 to \$2.50

Boardman's.....30¢/30¢/10¢

Cincinnati Brace Wrenches.....25¢/25¢/10¢

Diamond Steel.....35¢/35¢/10¢

Donohue's Engineer.....20¢/20¢/10¢

Eagle.....50¢/50¢/10¢

Hercules.....70¢/70¢/10¢

Tate's Vise Wrench.....55¢/55¢/10¢

Tatum's Brace.....25¢/25¢/10¢

The Favorite Pocket, # 204.....40¢/40¢/10¢

Walker's.....55¢/55¢/10¢

Webster's Pat. Combination.....25¢

Wringers, Clothes—

In lots of less than one dozen.

Am. Wringer Co.'s list, July 2, '94. 25¢ cash

Colby Wringer Co.'s list, May 1, '94. 25¢ cash

Lovell Mfg. Co.'s list, July 2, 1893. 25¢ cash

Perkins Mfg. Co.'s list, Feb. 1892. 25¢ cash

National Wringer & Mfg. Co., list

June 1, 1892.....25¢ cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1893

85¢/85¢/90¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal. 54¢
Linseed, City, boiled, 57¢
Linseed, Western, raw, 54¢
Lard, City, Extra Winter, 63¢
Lard, City, Prime, 62¢
Lard, City, Extra No. 1, 63¢
Lard, City, No. 1, 63¢
Lard, Western, prime, 62¢
Cotton-seed, Crude, prime, 26¢
Cotton-seed, Crude, off grades, 25¢
Cotton-seed, Summer Yellow, prime, 31¢
Cotton-seed, Summer Yellow, off grades, 30¢
Sperm, Crude, 56¢
Sperm, Natural Spring, 56¢
Sperm, Bleached Spring, 61¢
Sperm, Natural Winter, 63¢
Sperm, Bleached Winter, 63¢
Whale, Crude, 32¢
Whale, Natural Winter, 41¢
Whale, Bleached Winter, 44¢
Whale, Extra Bleached, 46¢
Sea Elephant, Bleached Winter, 20¢
Menhaden, Crude, Sound, 20¢
Menhaden, Crude, Southern, 25¢
Menhaden, Light Pressed, 25¢
Menhaden, Bleached W'ter, 33¢
Menhaden, Extra Bleached, 35¢
Tallow, City, prime, 51¢
Tallow, Western, prime, 51¢
Cocconut, Ceylon, 51¢
Cocconut, Coch'n, 51¢
Cod, Domestic, 30¢
Cod, Foreign, 30¢
Red Saponified, 35¢
Bank, 24¢
Strait, 25¢
Olive, Italian, bbls., 58¢
Neatfoot, prime, 60¢
Palm, prime, Lagos, 64¢

Mineral Oils—

Black, 29 gravity, 25 ¢/30 cold test, 69¢
Black, 29 gravity, 15 cold test, 7¢
Black, 29 gravity, summer, 54¢

Cylinder light, filtered, 12¢
Cylinder, dark, filtered, 10¢
Paraffine, 28 1/2 @ 24 gravity, 11¢
Paraffine, 25 gravity, 9 1/2¢
Paraffine, 28 gravity, 7 1/2¢
Paraffine, red, 9 1/2¢

Paints and Colors—

Barytes, Foreign, 6 ton, \$22.00
Barytes, Amer. floated, \$20.00
Barytes, Amer. No. 1, \$18.00
Barytes, Amer. No. 2, \$15.00
Barytes, Amer. No. 3, \$11.00
Blue, Celestial, 6¢
Blue, Chinese, 40¢
Blue, Prussian, 25¢
Blue, Ultramarine, 8¢
Brown, Spanish, 3¢
Brown, Vandyke, Amer., 3¢
Brown, Vandyke, Englb., 6¢
Carmine, No. 40, in bulk, 2.00
Carmine, No. 40, in boxes or barrels, 2.10
Carmine, No. 40, in ounce bottles, 3.00
Chalk, in bulk, 1.75
Chalk, in bbls., 100 lb., 33¢
China Clay, English, 1¢
Cobalt Oxide, prep'd, 9.00
Cobalt Oxide, black, 10.00
Cobalt Oxide, black, lot 100 lb., 1.90
Cobalt Oxide, black, less 100 lb., 1.96
Green, Paris, in bulk, 23¢
Green, Paris, 170 to 175 lb., 23¢
Green, Paris, small pack, 25¢
Rebates, 2¢/lb. on lots of 10,000 lb. or over, 2¢/lb. on 4000 to 10,000 lb.; 2¢ on 2000 to 4000 lb.; 1¢ on 1000 to 2000 lb.; 1¢ on 500 to 1000 lb. purchased during the season.
Green, Chrome, ordinary, 6¢
Green, Chrome, pure, 22¢
Lead, Eng., B.B. white, 5 1/2¢
Lead, Ann. White, 4¢
In Oil, 5 1/4¢
Lead, White, in oil, 25 lb tin pails, add to keg price, 1¢
Lead, White, in oil, 12 1/2 lb tin pails, add to keg price, 1¢
Lead, White, in oil, 1 to 5 lb. 8¢
sorted tins, add to keg price, 2¢

Lead, Red, bbls. and 1/2 bbls., 4 1/2¢
Lead, Red, kegs, 5¢
Litharge, kegs, 4 1/2¢
Litharge, bbls. and 1/2 bbls., 1.35¢
Ocher, French Washed, 1 1/2¢
Ocher, German Washed, 1 1/2¢
Ocher, American, 1 1/2¢
Orange Mineral, English, 7 1/2¢
Orange Mineral, French, 10¢
Orange Mineral, German, 7 1/2¢
Orange Mineral, American, 7 1/2¢
Red, Indian, English, 5¢
Red, Indian, American, 2¢
Red, Turkey, 9¢
Red, Tuscan, 7¢
Red, Venetian, American, 7¢
Red, Venetian, English, 1.10
Sienna, Italian, Burnt and Powd., 4¢
Sienna, Ital., Burnt Lumps, 1 1/2¢
Sienna, Ital., Raw, Powd., 4 1/2¢
Sienna, Ital., Raw, Lumps, 1 1/2¢
Sienna, American, Raw, 1 1/2¢
Sienna, American, Burnt and Powd., 1 1/2¢
Talc, French, 1 1/2¢
Talc, American, 1¢
Terra Alba, Fr'ch, 100 lb, 65¢
Terra Alba, English, 65¢
Terra Alba, American, 1¢
Terra Alba, American No. 2, 45¢
Umber, Turkey, Burnt and Powd., 2 1/2¢
Umber, Turkey Bnt. Ln., 2 1/2¢
Umber, Turkey, Raw and Powd., 2 1/2¢
Umber, Turkey, R'w Lumps, 2 1/2¢
Umber, Turkey, Bnt. Amer., 1 1/2¢
Umber, Turkey, R'w Amer., 1 1/2¢
Yellow, Chrome, 10¢
Vermilion, American Lead, 11¢
Vermilion, Quicks'er, bulk, 55¢
Vermilion, Quicks'er, bags, 55¢
Vermilion, Quicksilver sm't pgs., 60¢
Vermilion, English Import, 60¢
Vermilion, Imitation, Eng., 8¢
Vermilion, Trieste, 90¢
Vermilion, Chinese, 85¢
Whiting Common, 100 lb, 40¢
Whiting Gliders, 60¢
Zinc, American dry, 3 1/2¢
Zinc, French, Red Seal, 7¢

Zinc, French, Green Seal, 8 1/2¢
Zinc, French, V. M. X., 8¢
Zinc, Antwerp, Red Seal, 8¢
Zinc, Antwerp, Green Seal, 8 1/2¢
Zinc, German, L. Z. O., 8¢
Zinc, V. M. in Poppy Oil, Seal, lots of 1 ton and over, 10 1/2¢
Zinc, V. M. in Poppy Oil, lots less than one ton, 11¢
Zinc, V. M. in Poppy Oil, Red Seal, 8¢
lots of 1 ton and over, 8 1/2¢
lots of less than 1 ton, 10 1/2¢
Discounts—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 1/2¢; 25 bbls., 2 1/2¢; 50 bbls., 4¢. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfurt, 25¢
Black, Drop, English, 12¢
Black, Drop, Domestic, 7¢
Black, Lampblack, Best, 20¢
Black, Lampblack, Common, 7¢
Black, Ivory, 8¢
Blue, Chinese, 35¢
Blue, Prussian, 20¢
Blue, Ultramarine, 12¢
Brown, Vandyke, 7¢
Green, Chrome, 8¢
Green, Paris, 18¢
Sienna, Raw, 7¢
Sienna, Burnt, 7¢
Umber, Raw, 7¢
Umber, Burnt, 7¢

Putty—

In barrels and 1/2 bbls., 0.13¢
In tubs, 0.13¢
In tins, 0.13¢
In bladders, 0.13¢

Spillers Turpentine—

In regular bbls., 23¢
In machine bbls., 23 1/2¢

Glue—

Low Grade, 7¢
Cabinet, 11¢
Medium White, 12¢
Extra White, 18¢
French, 10¢
English, 10¢
Irish, 10¢

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